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EDGE

PlayStation ■ Saturn ■ Nintendo 64 ■ PC ■ Arcade ■ Net ■ Multimedia ■ CGI

36

Total recall
the future of data storage

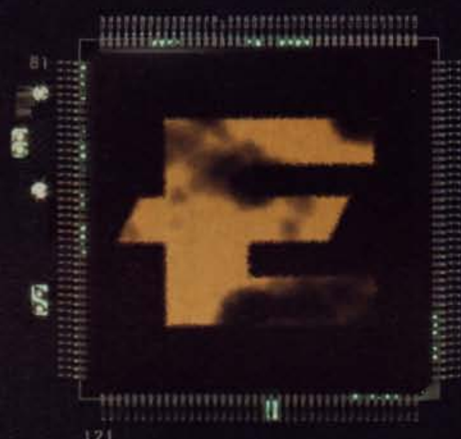
Criterion exposed

Tetsuya Mizuguchi
the new face of coin-op design

A lack of space for data has always been one of the biggest hurdles facing game designers. From the Sinclair ZX80 to the Nintendo DD64, Edge traces the history of memory and predicts future developments



Memory overload
squeezing pints into quart pots...



The screeching of tape recorders plugged into 8bit computers will be a distant memory for most game players, and probably one that most will be keen to forget. However, despite the gargantuan progress represented by today's technology (the average PC can access a staggering 8,192 times as much data space as a ZX81) the problem of loading and storing data remains a grim reality for most game designers.

In an era when ROM cartridges are considered virtually redundant, it's ironic that the current state of the art in videogaming exploits this dated technology. Nintendo's pursuit of its 'silicon over optical' policy has had many detractors over the years, but now the final product has arrived it's easy to suggest reasons for why it chose cartridges instead of CDs. Most convincing is *Super Mario 64*. One brilliant section sees Mario dragged along in the current of an underground stream which – as the camera immediately switches to reveal – plunges him into the waterfall next to the castle on the first level. A seamless transition from one memory-hungry location that could well prove impossible on the current generation of CD-based consoles.

Heavy-duty silicon comes at a cost, of course, and for those that aren't prepared to stomach Nintendo's high prices, videogames will continue to mean CD-ROMs and their associated loading times and RAM demands. In the PC market things are slightly rosier with memory prices plummeting and ultra-fast CD drives already on the market. However, with cheap, super-dense, solid state memory only a few years away, the game designer's biggest hurdle could well become a thing of the past...

The Future is almost here...

Voted Magazine of the year
Industry awards

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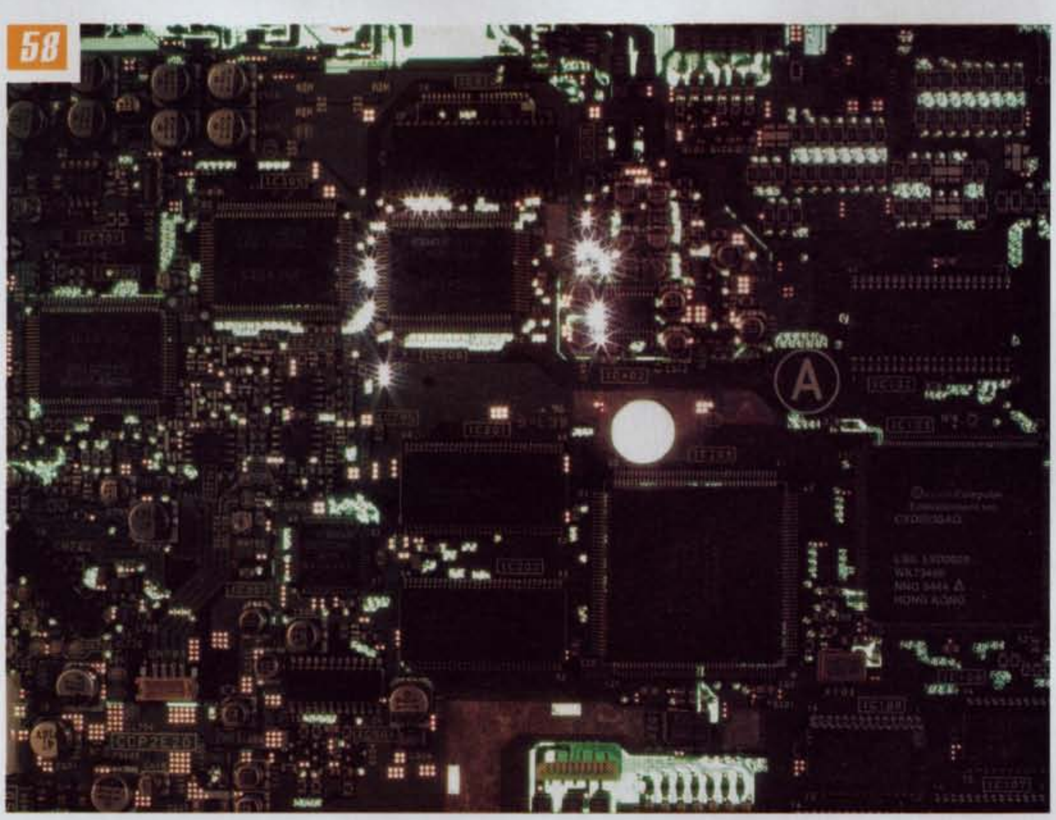




FEATURES



Photography: Jude Edginton









Super Mario 64 (above). PlayStation price (top right). TVML hits the Net (above right)





Turok: Dinosaur Hunter (left). Soviet Strike (above)





F1 (left). NiGHTS (above)



Photography: Jude Edginton



Photography: Hiroki Izumi





REGULARS









Nintendo's cutthroat approach to licensing is winning it no favours with thirdparty developers/**page 6**
Sega and Sony fire and reshuffle top employees/**page 10** • Piracy infiltrates the N64 software scene/**page 11** • The PowerVR chipset gets Intel's support/**page 12** • Sony slashes PS prices/**page 19**



*The latest **news** from the world of interactive entertainment*

Europe **unlikely** to figure in N64 strategy

With an April 1997 European launch likely, Nintendo seems to be ignoring Europe





NCL chairman Hiroshi Yamauchi (left) is reported to have said 'we will be fortunate if three out of the next 20 games delivered on the Nintendo 64 match *Mario*.' That's only part of the problem facing Nintendo HQ

The Nintendo 64 may have got off to a flyer in Japan, but many of the world's biggest publishers have some serious doubts about its potential in Europe and in the long term generally.

The reason for the uncertainty surrounding what is undeniably the most sophisticated console on sale anywhere in the world (supported by the best videogame so far created, *Super Mario 64*), is a series of question marks over key issues such as Nintendo's pricing policy, the viability of cartridges as a next generation storage medium, the depth of quality in the software range and, as ever where Nintendo is concerned, the terms on which it will allow thirdparty support.

It is also looking increasingly likely that Nintendo will not, as it had previously promised, launch the machine in the UK this year. Even if it does, the suspicion is that stocks will be extremely limited and that there will be nothing like full availability until Spring 1997.



By that time, Sony and Sega would both expect to have installed bases measured in millions and their consumers will have the pick of a massive software library enhanced by publishers' second or third generation PlayStation and Saturn games, games that should be pushing the machines to their limits.

Sega and Sony have also announced plans that will reduce the average cost of their software through the addition of mid-range price points (under £30) and budget lines (under £20).

The hardware will probably be priced at £179 or even £149.

MS NBC TV...

In a $500m joint venture, Microsoft has joined up with the American television network, NBC, to provide a 24 hour news channel. The service is intended to rival CNN's virtual monopoly on round-the-clock news broadcasting in the US.

MSNBC, as the channel is to be known, is being complemented by a www site (http://www.msnbc.com) that will provide indepth details of news stories covered on the television channel.

HMV goes retro

HMV are holding a retro gaming exhibition at their store in Oxford Street, London. Visitors will be able to play on C64, Mattel Aquarius and Intellivision machines as well as other classic consoles. There will also be an auction of retro hardware and a retro open evening where special guest coders will wax lyrical about the 8bit days. See Datebook (p19).

Against this, Nintendo will pitch a cartridge-based machine (with, in Joe Punter's mind, all the unwarranted but unavoidable clunky connotations of 16bittery), probably priced somewhere between £200 and £250. On the software side, there should be at least 25 or so games available for the N64 by then, but how many will be anywhere near as good as *Mario 64*? Nintendo's own president, **Hiroshi Yamauchi**, is reported to have said that 'we will be fortunate if three out of the next 20 games delivered on the Nintendo 64 match *Mario*.'

Virgin Interactive Entertainment has one product, *Freak Boy*, that it expects to be ready for launch in Spring '97. It has one other title currently going through Nintendo's approval process but that was developed in the publisher's Japanese office by a Japanese team and with the Japanese market very much in mind.

European boss, **Tim Chaney**, explains: 'I think they'll edge it over there, but in the UK the Nintendo 64 will have an uphill struggle. I don't think anyone can deny that. This has never been a happy territory for them.

'There are so many question marks. Will consumers pay £70? Will they be easily convinced of its technical superiority? Will one in ten games match *Mario*?'





Virgin's European boss Tim Chaney (right) has only one title planned for the N64, platformer *Freak Boy* (above)

'THEY'RE COMING IN LAST AND THE PUBLIC IS GOING TO SEE THEM AS THE THIRD NEXT GENERATION PLATFORM IN EVERY SENSE... THE N64 WILL BE SUNK BEFORE IT GETS OUT OF THE HARBOUR IN EUROPE'



As launch titles go, *Super Mario 64* must rank as the strongest ever. But will its quality turn out to be a hindrance to thirdparty developers?





Visuals this good will be easy to emulate, but gameplay is another matter altogether

Tim Christian, European MD of Microprose, believes he has some answers – and none of them are yes. Microprose was one of the first non-Japanese firms to be granted a publishing licence for the N64 and began developing a 64bit version of *Top Gun* last year. A couple of months ago, however, it pulled the plug.

'They're coming in last and the public is going to see them as the third next generation platform in every sense,' blasts Christian. 'By the time the N64 arrives I think the average price of Sony and Sega software will have dropped considerably – you'll be able to buy top quality PlayStation and Saturn games for under £30. How could a mass market then develop around a machine with games selling at £70? I think the N64 will be sunk before it gets out of the harbour as far as Europe's concerned.'

At Electronic Arts, international vice president **Mark Lewis** is less vitriolic but similarly sceptical: 'The launch was successful in Japan – but you can't measure real success in Japan until you get to three to five million, as 3DO painfully found out. It's actually very easy to sell 1,000,000 units of a new console in Japan, particularly if you're Nintendo. The test comes after that and outside of Japan.

'What terrifies me is that the price of the software on grey import over here is £100 – and even the official price in Japan is the equivalent of $100. £70 for a software title?! As long as we can bundle an N64 with everyone we sell we might be alright. Some dedicated hobbyists will pay that sort of money, but it's not a mass market.'

EA will, nevertheless, publish *J-League Soccer* for the format in Japan this Christmas and will have *FIFA* ready to launch with the console when it arrives in Europe. 'Beyond that,' Lewis expounds, 'we can't commit any more resources. How can we when we don't have a business model from Nintendo? We don't know the official price of the hardware or software over here, we don't know the cost of goods to us as third parties and we don't know the payment structure. We have to reserve judgment and prioritise other formats of which we do have a clear sight.'

The one thing that is presumed is that Nintendo will control the manufacturing of all N64 cartridges, taking code and an order for an initial number of units from third parties. Payment is due in full upfront, before the third party has sold a single copy.

This is obviously a hugely problematical model for publishers. The investment is





EA's Mark Lewis (top) has a team working on *FIFA Soccer* for the N64 (3DO version, above)

Who is it?

Allegedly, more photos of this TV-come-film star are downloaded from the web each day than those of 'Plastic' Pamela Anderson or even every nerd's favourite, X-Files star, Gillian Anderson

Continued next page

Continued

N64 coin-ops

Seta has become the first Japanese company to be granted a licence for developing coin-ops based around the Nintendo 64's hardware. It's now well known that the *Cruis'n USA* and *Killer Instinct* coin-ops had little in common with the finished N64 hardware, so it's possible that Seta's games will be the first to take advantage of the completed chipset.

With Namco and Capcom committed to developing for Sony's PlayStation-based System 11 technology, and Konami signed to develop for M2-powered arcade technology, Seta could well be one of the companies that seems keen to keep in Nintendo's good books.

massive, the risk enormous. Industry pundits estimate that the price-per-unit of a finished cart from Nintendo could be up to $40. If a firm wants to order a fairly modest 250,000 copies of an N64 game the cost will be $10 million.

The dangers are compounded by the fact that the process of manufacturing cartridges is long and laborious compared to the quickfire duplication of CDs. Publishers must place their orders months before they want to actually start selling their products, which means that in, say, July, they have to guess the state of the market in the run-up to Christmas. They also have to try and come over all Mystic Meg about what the competition might be up to, whether or not the licence they've just paid a few million dollars for will still be hot, etc...

When you're investing millions and millions of pounds upfront without any guaranteed return, guesswork is a very worrying business.

In the SNES market (which followed an identical model), almost every publisher made at least one horrendous mistake and ended up with warehouses full of carts that couldn't be sold at anything like full price. Discounting became rife so that only the very best games (maybe half a dozen a year, most from Nintendo itself) could command the £40-50 price tags that delivered a profit, the rest were dragged down into the mire.

The market became a mess and the games industry as a whole lost, literally, hundreds of millions of pounds. Nobody wants a repeat. **Rod Cousens**, European president of Acclaim Entertainment, believes



The N64's Japanese launch was a success – but few would have expected otherwise. The machine is still far from being market leader

- and where there is still room for everyone to make margin. I'm sure Nintendo see the wisdom in that policy.'

Christian, with *Top Gun* spiked, no bridges left to burn and diplomacy to the winds, is more scathing: 'Speaking as a publisher, it's an absolute nightmare. They're asking us to take the most enormous risks for the most paltry rewards. It makes you question what value, if any, they place on thirdparty support. It really is about time somebody told Nintendo that their particular brand of feudalism died out years ago.'

Chaney chips in: 'There's no doubt it makes life more difficult. You can learn to

IF A FIRM WANTS TO ORDER A FAIRLY MODEST 250,000 COPIES OF AN N64 GAME THE COST WILL BE $10 MILLION... THE DANGERS ARE COMPOUNDED BY THE LABORIOUS NATURE OF MANUFACTURING CARTS

that the Nintendo 64 can only flourish globally if supported by a rich, varied and substantial software library, 'and that can only be achieved with the enthusiastic support of all leading publishers'.

He continues: 'If Nintendo duplicate the SNES business model and come up with a cost of goods of anything like $40, then that sort of support would be virtually impossible. They have it within their power, however, to create a market where software sells at under £50 - which I believe it has to



***Top Gun* (PlayStation version): one game you *won't* be seeing on the N64. Microprose has lost faith in Nintendo**

live with it by adjusting the way you sell, but you want to be reasonably sure of some substantial returns in that case.'

Lewis adds: 'Sticking with cartridges and this model makes the Nintendo 64 less attractive for third parties. If they sell 25 million machines it suddenly becomes more attractive, but that's hard to imagine with software at £70 a pop.

'Remember, publishers only have limited resources and so only a percentage of formats can figure in any firm's plans. I believe the ones with the poor business models will be left out.'

The one thing everyone agrees on is the brilliance of *Mario 64*, but even that raises questions. Chaney concedes that no third party will come up with a game of equal quality in the next 12 months and that 'the best of the rest will be nowhere near as good as *Mario* for some time'.

Lewis says *Mario* is 'a superbly crafted piece of software, it's the first time you've felt you were living in a great cartoon rather than just watching a pretty good one. *PilotWings* is nice and ambient but nowhere near as good as *Mario*.'

It is...

Teri Hatcher, who plays Lois Lane in the New Adventures of Superman. Teri recently made her post-Superman cinematic debut as a femme fatale in the, ahem, 'steamy thriller' Heaven's Prisoners

N64 releases

Nintendo has set out its Japanese N64 release schedule for the remainder of the year, and confirmed that *F-Zero 64* and *Yoshi's Island 64* will indeed appear.

September
- *Wave Race 64*

October
- *Tetris Fire*
- *Star Wars: Shadows of the Empire*

November
- *Super Mario Kart 64*
- *GoldenEye 007*
- *Body Harvest*
- *Blast Corps*

December
- *Kirby's Air Ride*
- *Star Fox 64*
- *Buggy Boogie*
- *Climber*
- *Golf*
- *F-Zero 64*
- *Yoshi's Island 64*

He goes on to claim that it's conceivable that any third party could come up with a *Mario 64*, but predicts that nobody will, the reason being that an independent publisher has so much more to lose than Nintendo if it fails – and far less to make if it succeeds.

That's why games like *Mario 64*, while highlighting the awesome potential of the machine and proving that gameplay can be overhauled with the added depth of an extra dimension, also make it harder for third parties to support.

Games like *Mario* on the Nintendo 64 and *Yoshi's Island* for the SNES emerge from Nintendo's R&D departments largely because the manufacturer doesn't have to pay a royalty to itself and so can afford to invest more time, people and money into the projects.

When such stunning titles appear they inevitably soak up almost all the media attention and high street sales – and if some poor publisher's game happens to come out in the same week, or even the same month, it's left languishing in the shadows. It's yet another risk to contend with.

And, as Lewis' suggestion that other firms 'could but won't' come up with a *Mario 64* implies, the reason it's always Nintendo and not a third party that comes up with these technical breakthroughs and commercial blockbusters is not because its engineers are more familiar with the guts of the machines (although, of course, they are), but because it can afford to.

As the boss of one of Europe's biggest software houses commented at the time of *DKC*s launch: 'If we came up with that we'd have to charge £100 just to break even.'

Lewis points to the lower-cost floppy optical storage device that Nintendo has said it will introduce within the year as a possible solution. If that offers a lower software retail price to the consumer and cheaper cost of goods to third parties, it could be Nintendo's most significant step yet away from 'feudalism'.

At the moment, however, the project is sketchy and there is no talk of pricing.

Underpinning the whole N64 argument is a suspicion that ultimately Nintendo cares little about Europe and less about thirdparty publishers. Its priority markets are Japan and the US and its business depends on selling its own software.

As Cousens points out, huge licences and great games exist outside Nintendo's universe and if it doesn't welcome third parties then it will sometimes miss out, but does Nintendo care?

If it can supply a 64bit console at £199 and support it with 25 titles a year, four or five of which are as good as *Mario 64*, it could just prosper in brilliant isolation.

Its consumers would miss out on the *Mortal Kombats* and the *FIFA Soccers* that are owned by third parties like Acclaim and EA, but then anyone who doesn't have a Nintendo 64 might arguably miss out on the best games for the best console in the world.

The most likely scenario as far as the UK is concerned is that the N64 will not be fully available until Spring 1997, it will carry a higher price tag than either the PlayStation or Saturn, it will have a fraction of the thirdparty support offered to Sony's and Sega's systems (and, therefore, a relatively tiny software library) and its games will sell at around two thirds the price of the average 32bit title. It just might, however, be a storming success. ∎

> 'SPEAKING AS A PUBLISHER IT'S AN ABSOLUTE NIGHTMARE. IT REALLY IS ABOUT TIME SOMEBODY TOLD NINTENDO THAT ITS PARTICULAR BRAND OF FEUDALISM DIED OUT YEARS AGO'



Upcoming Nintendo 64 software (clockwise from above): Nintendo's *Mario Kart 64*; Imagineer's *Baseball King*; Epoch's *Doraemon*



Nintendo's own *Star Fox 64* is poised to be one of the system's best new games

What is it?

This successful Activision adventure game, which scored eight out of ten in E37, may soon be made into a big budget film or TV series. Cinema giant Universal Studios has snapped up the rights

Sega and Sony close US ranks as N64 **looms**

Major corporate reshuffles occur just as Nintendo rocks the videogaming boat

Squaring up

Following its 'defection' to the PlayStation earlier this year, Square Soft has revealed more titles for Sony's machine.

Shooter *Zauver* (below), fighting game *Bushido Blade* (below middle) and RPG *Saga Frontier* (bottom) are yet to be given release dates.







It is...

***Spycraft*, or, as it's modestly subtitled, *The Great Game*. In the wake of Mission: Impossible's success it should do well - especially considering the glut of assassination, torture, and killing scenes**

Sega of America has announced that current CEO, **Tom Kalinske**, is leaving the company to join Education Technology LLC. Industry unknown **Scoichiro Irimajiri**, who joined Sega in 1993 after 30 years at Honda, has now been appointed chairman and CEO.

The move is just part of a major corporate re-shuffle sweeping Sega of America's upper management. Sony's **Bernie Stolar** has joined the company as executive vice president, responsible for product development and thirdparty business, and ex-Atari employee **Tedd Hoff** has been promoted to the position of executive vice president of sales and marketing. Stolar has 18 years experience in the games industry and, while at Sony, was one of the main figures behind the PlayStation launch.

Kalinske, who has been at Sega for six years, will stay with the company until September 30 and remains on SOA's board of directors indefinitely. Sega also announced that **Hayao Nakayama**, chairman or SOA and Sega Enterprises, and **David Rosen**, co-chairman, have resigned from their current SOA posts.

On Kalinske's departure, new CEO Irimajiri, who retains his position as representative director and executive vice-president of Sega Enterprises, said, 'We are sorry to see Tom leave Sega, but he left us in a strong position in the marketplace. I am excited to be taking a more active role at Sega of America now... we're looking forward to an extremely favourable holiday season.'

In a move which strangely shadows Kalinske's departure, Sony Computer Entertainment of America has ousted its executive vice-president, **Jim Whims**. Whims, who was previously the public face of SCEA, will be joined at the job centre by **Angelo Pezzani**, a fellow management member who has also been 'asked to resign'. By way of explanation, SCEA's vice-president of marketing, **Andrew House**, told **Edge**'s sister magazine, Next Generation, 'Essentially it's been a year since we launched the PlayStation in the US and the senior management felt that the mix and skills needed now are different in the second year than they were in the first.'





After six years of service, Sega's US chief Tom Kalinske (left) is packing his bags. SCEA's executive vice-president Jim Whims is off too

House continued by laying out Sony's plans for the rest of the year. 'With the fourth quarter just around the corner and a new competitor coming into the market, we're looking to capitalise on the existing user base that we have for hardware. We also want to expand aggressively now. We're looking to establish a very strong software-to-hardware ratio and get some great killer titles out during the fourth quarter that will build the business.'

With Stolar, Whims and Pezzani out, Sony has effectively eradicated its old executive vice president mantle, making way for **Shigeo Maruiama** who becomes chairman and CEO, and **Jack Tretton**, who takes on the role of executive vice-president of sales.

IT'S BEEN A YEAR SINCE WE LAUNCHED THE PLAYSTATION IN THE US AND SENIOR MANAGEMENT FEEL THAT THE MIX AND SKILLS NEEDED NOW ARE DIFFERENT IN THE SECOND YEAR THAN THEY WERE...

Although House maintains it was 'entirely coincidental' that Whims and Kalinske left in the same week, more objective industry pundits will no doubt be speculating that the imminent arrival of the N64 may have precipitated both actions. However, regardless of Nintendo's console, Sony has not had much success with its upper management. **Steve Race** was the first to be appointed as CEO, only to be replaced several months later by **Marty Homlish**, who was only recently usurped by Jim Whims. Ironically, each of these men resigned, or were removed from their posts just after giving interviews to Next Generation magazine. Therefore, if Maruiama decides to talk to **Edge**'s US sister mag in the next few weeks, he probably shouldn't bother spending too long filling his new desk with personal knick-knacks.

Time to go home...

Jim Whims was the Sony VP who fired the $199 bombshell at E³ while telling his peers, Tom Kalinske and Howard Lincoln, to 'go big or go home'. It has been claimed that Sony's Japan bosses wanted more control in the US, resulting in his going home himself.

DATA STREAM

Amount NASA has spent on the X 33, an experimental successor to the space shuttle: **$941m**
Profit made by Rupert Murdoch's News Corporation last year: **£793m**
According to Just Seventeen magazine, the proportion of boys who are worried they'll never find the right girl and fall in love: **60%**
Sales of PC software in Asia last year: **$1.14billion**
Pay per episode recently demanded by the cast of Friends: **$100,000 each**
According to the International Data Corporation, *Netscape Navigator*'s installed base: **38m users**
Microsoft Excel: **30m**
Microsoft Word: **21m**
According to research by IDSA, percentage of PC users who run entertainment software and are female: **40%**
Amount of US households that own a videogames console: **31%**
Sega revenue for year ending March '96: **¥346,182m**
Nintendo: **¥300,481m**
Namco: **¥85,716m**
Taito: **¥74,906m**
(source: AB Europe)
Eidos pre-tax loss for the 15 months ending March 31 '96: **£1.95m**
Number of Manchester City supporters within the Eidos group: **two**
According to New Scientist, the number of pieces of debris from exploded or abandoned satellites currently orbiting Earth: **8,000**
Cost of merger between Time Warner and Turner Broadcasting (creating the world's biggest media company): **$7.5 billion**
(source: http://www.cnn.com)
Intel's net income for second quarter of '96: **$1.04 billion**
(source: as above)

Quake and N64 suffer at hands of pirates

Technological advantages are making videogame piracy even more prevalent





The best things in life are free – like marriage (sort of), ironically depicted in *Quake*'s marketing strategy, and now *Quake* itself – anonymously posted on the Net recently

Only hours after the shareware version of *Quake* was released via the Internet it became apparent that an early build of the full game was also circulating illegally. The *Quake Beta*, as it has become known, contains all 30 levels of the finished game plus the restricted weapons, monsters and multiplayer maps.

It is thought that the game was posted to an anonymous FTP site by one of *Quake*'s beta testers who are located around the world and used by id for final bug testing and gameplay balancing. Within hours of it being available it was hacked and spread like a rash across the world, causing a major headache for both id and distributors, GT, both of whom having remained quiet since the leak. The only comfort id can gain from the episode is that at 21 megabytes the files were too large for many modem users to obtain and the game, although quite playable, was some way from completion.

Occurrences of this nature are becoming more common as technology improves. Only recently Microprose experienced a near miss as a prerelease copy of *Grand Prix 2* made its way onto the Net. Fortunately for Microprose, programmer **Geoff Crammond**'s copy protection rendered the game unusable without fingerprinted CDs.

Meanwhile, a Hong Kong company has posted a message on a Nintendo-related newsgroup claiming to have N64 cartridge-copying devices in stock. The unit, which comes supplied with 16Mb of RAM (upgradeable to 128Mb using PC-standard 30-pin simms), costs $525 (£350).

A HONG KONG COMPANY HAS POSTED A MESSAGE ON A NINTENDO RELATED NEWSGROUP CLAIMING TO HAVE CARTRIDGE COPYING DEVICES IN STOCK, OFFERED AT A PRICE OF $525

With a 1.44 floppy drive as standard, the device is claimed to have a parallel port allowing games to be stored on a PC hard drive and loaded into the unit that way.

Concerning the dubious nature of the unit, the posting says: 'We know of the illegality of such a product, but are not particularly concerned since we are located in Hong Kong, beyond the reach of the law.'

Coming just 19 days after the launch of the N64, the copying device will no doubt have alarmed Nintendo. The company has suffered terribly from piracy in Hong Kong with its previous formats (the Game Boy, NES and SNES), and the fact that its newest technology has apparently been cracked so swiftly will be a significant blow to its strategy.



Only 19 days after the launch of the N64 a company is already claiming it has technology to copy its software

Véritable feast

Id is developing a version of *Quake* to take advantage of Rendition's Vérité-based graphics accelerator board (see E33). The Vérité-compatible *Quake*, which is expected to sport perspective correction and bilinear filtering, will be completed even before the *DirectX* version.

LucasArts is also developing games with Rendition's graphics technology in mind; *Dark Forces 2: Jedi Knights* will be Vérité compatible.

VideoLogic gets Intel support

Future PowerVR accelerators will support Intel's Accelerated Graphics Port Pentiums

Voodoo coin-op

3Dfx Interactive, designer of the Voodoo graphics acceleration chipset, has announced details of the first arcade game to employ the company's technology.

***Home Run Derby*, developed by Interactive Light, is a baseball game in which the player hits a virtual ball with a real baseball bat. The game features 'photorealistic' graphics and an infrared sensor which determines the batter's timing and the speed, angle and orientation of the ball.**

Interactive Light is also planning to develop boxing, golf and other sports sims using the 3Dfx technology.

NEC and VideoLogic have announced that the future family of their graphics accelerators, incorporating the PowerVR 3D chipset, will support Intel's new Accelerated Graphics Port.

The AGP will provide future PCs with a high-bandwidth, low-latency, direct link to the PC's main memory. This will allow AGP systems using PowerVR to eliminate local texture memory, sharing system memory with no loss of 3D performance.

Intel's interest in the PowerVR is down to the chipset's high 3D capabilities combined with its cost effectiveness. PowerVR eliminates the local z-buffer memory found on conventional 3D systems, minimising frame buffer and texture memory access. Instead of normal z-buffering, PowerVR features on-chip hidden-surface removal and deferred texturing, which means that only visible polygons are textured and written into the frame buffer regardless of the game's depth complexity. This requires a fraction of the memory bandwidth needed by conventional 3D systems and ensures the absolute minimum AGP bandwidth is used.

The chip's low use of CPU bandwidth makes it a good companion to AGP. As a recent press release from NEC points out, 'Because AGP shares main system memory bandwidth with CPU and PCI accesses, PowerVR's low memory access requirement ensures the majority of memory bandwidth is available to the CPU - often the bottleneck in high-performance 3D systems. This enables the PowerVR architecture to break the barrier hit by other AGP 3D systems.'

In short, Intel likes PowerVR because the system requires no local z-buffer or AGP-

INTEL LIKES THE POWERVR BECAUSE THE CHIP REQUIRES NO LOCAL Z BUFFER OR AGP-BASED Z-BUFFERING

based z-buffering. According to NEC, 'AGP-enabled integrated videographics accelerators based on PowerVR 3D, including single chip packages, add-in cards and chip-down solutions will hit previously unachievably low system price points while retaining no-compromise 3D performance.'

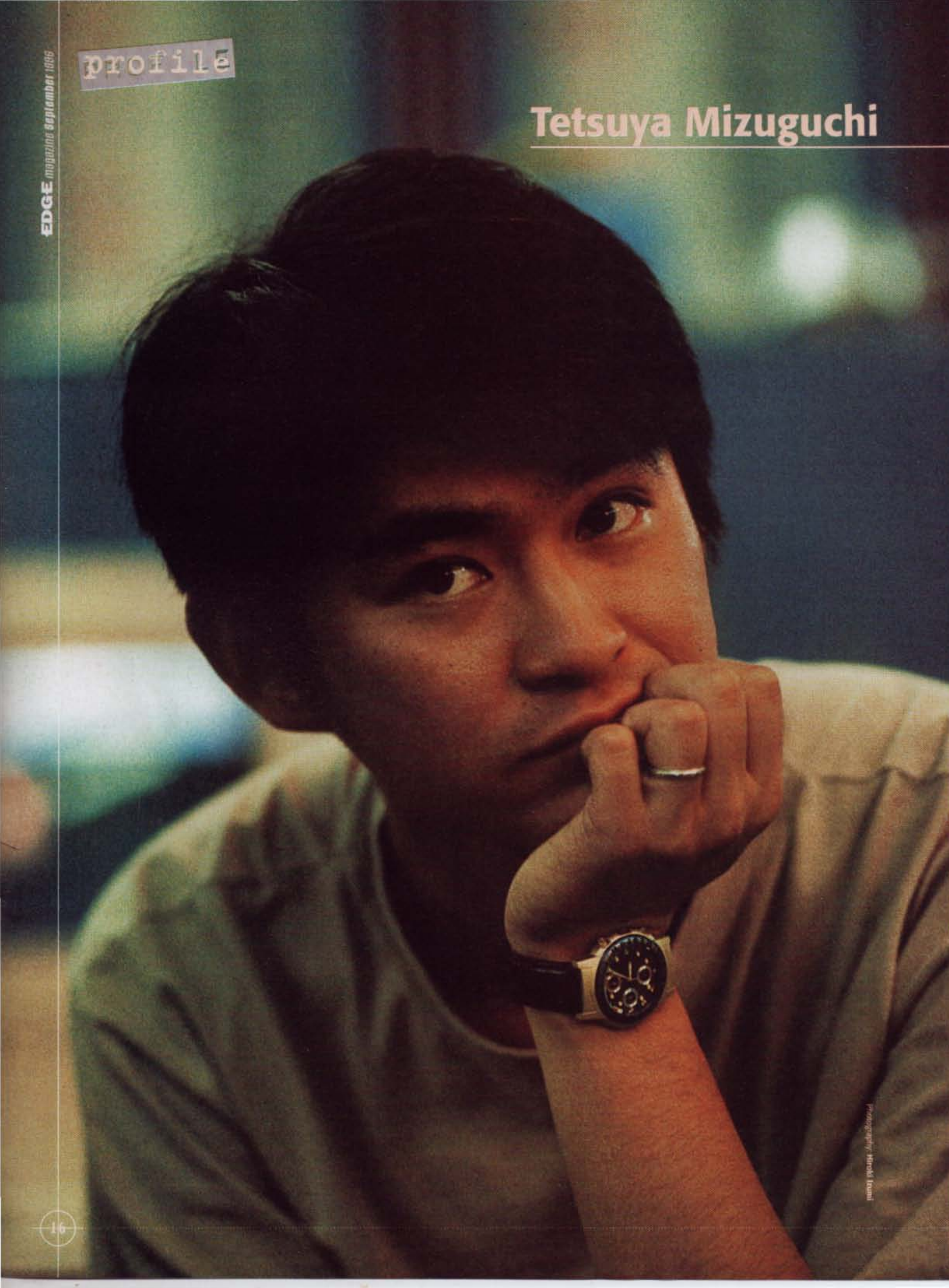
NEC and VideoLogic expect to demonstrate AGP-compatible graphics accelerators to PC manufacturers during the first half of 1997, with shipments concurrent with Intel's AGP Pentium Pro chipset in the second half of '97.



POWER VR

***Rave Racer* is still one of the only reasons for PC gamers to consider buying the VideoLogic chipset. However, with future editions of the chipset supporting Intel's forthcoming AGP, PowerVR could be the graphics card of choice**

Tetsuya Mizuguchi



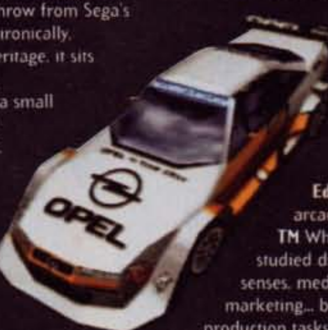
Photography: Hiroki Izumi

vice director, AM Annex

Tetsuya Mizuguchi has big plans for videogames. Former producer within Sega's Amusement Machine R&D Department 3 (AM3) and responsible for hugely successful coin-ops, *Sega Rally Championship* and *Manx TT*, he is now in a privileged position having formed a new AM department, provisionally titled 'AM Annex'. In his late twenties and currently enjoying a certain amount of autonomy within this new division, Mizuguchi-san's offices occupy the fourth floor of a small building a stone's throw from Sega's headquarters. And somewhat ironically, considering its racing game heritage, it sits above a flashy car showroom.

Drawing on the talents of a small team of developers previously working within AM3 and AM2, Mizuguchi's first project is *Sega Touring Car Championship* - the latest game to use Sega's Model 2 technology. Based on the official touring car racing season and expected to be ready in time for the JAMMA show in mid September, Mizuguchi recently invited **Edge** to look at a 50% complete version of the game (even well before the fervent Japanese games press got a look in) and to question him about the new department. A detailed look at the game will follow in E37.

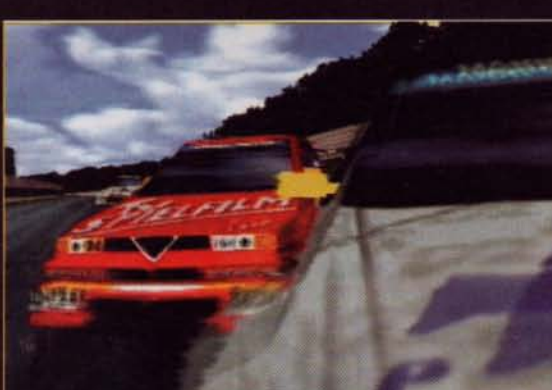
Edge AM3 has been a great success - what made you want to set up a new AM department?
TM Our new department is a small one but that's not necessarily a bad thing for a working environment - big departments have their disadvantages. Before creating the new division I explained my concept to the head of AM3 and then to **Yu Suzuki**. However, we all agreed that creating a new department separate from AM3 would be a good thing. First, we began with about six or seven people - initially the programmer of *Sega Rally* and some designers. Then some more staff joined us. We're going to make two to three games a year and later this year we may even start work on *Sega Rally 2*...
Edge Will racing games remain your speciality?
TM I hope to make one per year but while I'm still keen to make racing games I want to pursue some new directions... our new department has some very good skills and design sensibilities. Personally, I want to make some new games based on dreams - not that *Sega Rally* wasn't a dream of mine! - or related to fantasy. I want to create new worlds and keep things very high-end - use nice colours and very realistic effects. We want to make captivating games based on new concepts, we want to make some challenging games.
Edge How long have you been with Sega?
TM If my memory serves me well, after graduating from university I entered Sega back in 1990 - so about six years. I graduated from Nihon University of Art, a famous Japanese art college, where I majored in literature. Students can choose from different subjects such as literature, journalism, etc.



Edge And this lead to a career in arcade games...
TM When I was at university I studied different topics like physical senses, media... I was also interested in marketing... but there are no physical production tasks in marketing so I thought it would be boring. I preferred doing something in relation with human senses or entertainment. Something more in relation with human nature, a field where I could do some research. I discovered that the entertainment world would be suitable. Unlike the arts, where it is often a matter of taste whether something is good or not, creating good interactive entertainment is more easily definable. I chose Sega because it was using new technology and I was able to study things like human movements.
Edge What was your first project?
TM When I entered the company I joined a department which was doing some arcade cabinet design. During the first year I got involved in many different projects, but because I was interested in computer graphics, I joined a CG department that was designing *Megalopolis* [a prerendered shoot 'em up developed for the Sega AS-1 simulator]. This position proved to be interesting as I had already been involved with computer graphics when I was at university. Designing *Megalopolis* was fun - I got to make my first CG movie, unveiled at Siggraph. It was a great experience for me... but I haven't designed a prerendered CG movie since then.
Edge Why did you choose Sega over Nintendo?
TM Simply, because I was interested in arcade games. Nintendo is a consumer company, Sega had both businesses and I wanted to make some arcade games. In the beginning I always wanted to make arcade games but now, I admit, I would really like to make console games, too [*Sega Rally* was converted by a consumer software department, not AM3].
Edge What's your opinion of working at Sega?
TM Sega is overflowing with creative-minded people. It is a very good place for creativity. In our new department, however, we don't feel like we're part of Sega's AM departments. If anything, we feel as if we're an external team. It doesn't mean we are completely free but it enables us to see what is happening beyond Sega's AM departments.
Edge What relations does AM Annex have with AM2 and AM3?
TM We all belong to Sega, so there are some frequent exchanges of staff between departments. Everybody respects the work of others and when a particular division is doing something exceptional, other departments do not hesitate to say so. That is probably one of the best aspects of working within Sega.

Unlike the arts, where it is often a matter of taste whether something is good or not, creating good interactive entertainment is easily more definable

Edge Is Sega a typical Japanese company in the way it treats its employees?
TM No, not really. I believe Sega gives its employees lots of freedom. I think it is possible to compare the atmosphere within Sega to the old Hollywood atmosphere. I believe it will be very good for the worldwide leisure entertainment industry to have, at its core, key people who have already had ten or 15 years of work experience in Sega...
Edge How many hours do you work a week?
TM I really don't know. Normally, I begin around ten o'clock but it really depends on the day. We sometimes spend nights in the office. It really depends on the project.
Edge In Japan, has Sega's image changed over the years you've been with them?
TM I think so. When I entered Sega, the image of the company was not as strong as it is now. But recently Sega has done some great things.
Edge What interest or hobbies do you have?
TM I like travelling and I'm fortunate to be able to travel a lot with my job. I also go clubbing a lot and I really love techno music, so I often go out in different techno clubs in Tokyo. Needless to say, the music in *Sega Touring Car Championship* will be techno! In Japan, many young people are making this kind of music, or are playing it as DJs, simply because they like it. I enjoy going to techno parties and in this kind of place there is lots of energy and creativity. Sometimes, people will approach me if they know I work for Sega and make me listen to the tapes they've created...





***Sega Touring Car Racing* is the first project to come from Tetsuya Mizuguchi's 'AM Annex' division. Real cars such as Mercedes (above) and Opel will feature**

Sony cuts prices



Will the original *Ridge Racer* make a sub-£30 showing come Christmas?

Sony is rumoured to be planning to drop the prices of key PlayStation titles in an effort to dominate the videogames market, with a mid-price range of older games at £25-30 and a series of classics at under £20 each being considered.

Ridge Racer, Raiden Project, Arc the Lad and *King's Field 2* have already been re-released this month in Japan for ¥2,800 (£17) each. An equivalent scheme for Europe is not yet final, but Sony may have a range of budget games out by Christmas.

Reducing the prices of classic games is not Sony's only scheme to retain market domination - the company also plans a series of initiatives aimed at securing thirdparty support. These include allowing demo discs of new games to be produced and sold in retail outlets for around £5, and giving thirdparty developers demo and promo discs of new games for distribution to mags, clients, etc.

ATI rages on

Sony has announced details of a new range of PCs to be launched in the US in the next few months and Japan in the Spring. The company will also be endorsing ATI's 3D Rage board by adding two Rage compatible games to the graphics cards bundle pack: *Mechwarrior 2* and *Wipeout*. Tim Errington, senior vice-president of sales and marketing for Sony Information Technologies told Edge, 'ATI's technology was a perfect match for Sony and the Sony PC.'

Both US and Japanese machines will be Pentium-class PCs, bundled with *Win 95* and will appear under Sony's VAIO brand name. The Japanese launch represents Sony's return to the previously minuscule Japanese PC market after a four year absence. The company pulled out of the market in 1992 due to disappointing sales.

Datebook

September

i-TV '96: The Super Highway Through The Home? – Sept 3-5, Edinburgh University, Scotland. Over 80 leading practitioners and thinkers from industry, government and academia from around the world gather to discuss the realities and visions of interactive television. Contact conference manager **Peter Niven** on +44 (0)131 650 9020

JAMMA – Sept 12-14, Nippon Convention Centre, Makuhari Messe, Tokyo, Japan. Namco, Sega and the rest show off their latest coin-ops at this highly respected event. Contact JAMMA: tel +81-3-3438-2363, fax +81-3-3438-2721

ECTS Autumn – Sept 8-10, Olympia, London. Europe's biggest trade-only computer event, planned to be much bigger and more memorable than the Spring '96 version. Contact Blenheim Exhibitions, tel: +44 (0)181 742 2828

October

World Gaming Congress – Oct 1-3, Convention Centre, Las Vegas, USA. Game companies gather in the gambling capital of the world. Contact: Gaming and Wagering Business, tel +1-212-594-4120, fax +1-212-594-0514

Retro Gaming Exhibition – Oct 21-Nov 2, HMV Level One, Oxford Street, London. Nostalgia-hungry visitors will be able to play on a variety of old gaming platforms, such as the C64, Vectrex and Colecovision. There will also be an auction of classic hardware and software. For more info, phone HMV on +44 (0)171 631 3423 and ask for Level One.

Show organisers: if your show isn't listed here, it's only because you haven't told **Edge** about it. Do so on 01225 442244, or fax us on 01225 732274, or send details to Datebook, **Edge**, 30 Monmouth Street, Bath, BA1 2BW. Email: edge@futurenet.co.uk

TVML

First came VRML, then Java. Now TVML promises to be the language to take the Net into the third dimension. The difference this time is that the priority is online gaming

tvml

Veteran Net surfers will be pleased to note that, despite growing commercialisation and a slow but definite seepage into mass public consciousness, the information superhighway remains as confusing, contradictory and complex as it has ever been. At first, it looked as though VRML might mutate into a language capable of bringing 3D gaming to the Internet. Then Java appeared, boasting a number of attractive attributes. Now there's TVML.

TeleVisual Mark up Language is a 3D-capable Internet programming language which works alongside HTML to create a complete online publishing system. In other words, it's another contender in the evergrowing rush to bring 3D graphics to the Net. Developed by newcomer TVML Ltd, the technology was originally designed for TV net surfing, via a set-top box, but the company sensibly decided to broaden its remit to include the current methods of Net access (PCs and Macs, etc).

Importantly, TVML has been designed specifically for online gaming. Developers using the language will be able to produce 2D and 3D single or multiplayer games which can be played over the Net in realtime. Up until now it was felt that data transmission over the standard network would be too slow to allow for realtime, multiplayer 3D gaming. Therefore, complex 3D games have only previously been set up over commercial networks like AOL, or over separate games-specific networks like BT's Wireplay. **David Wainwright**, managing director of TVML Ltd, is aware of the predicament. 'Latency [slowdown due to data transmission] is one of the biggest problems facing Internet games designers. The Internet is currently overloaded, but as more professional Internet providers install higher-spec equipment, the situation will improve.' Until then, how does TVML plan to cope with latency? 'We heavily compress the 3D wireframes and transmit the textures in advance. With a PC that has local storage, we can improve this by downloading new levels as the game plays. The demos on the Web site come 100% across the line as the user plays the game.'

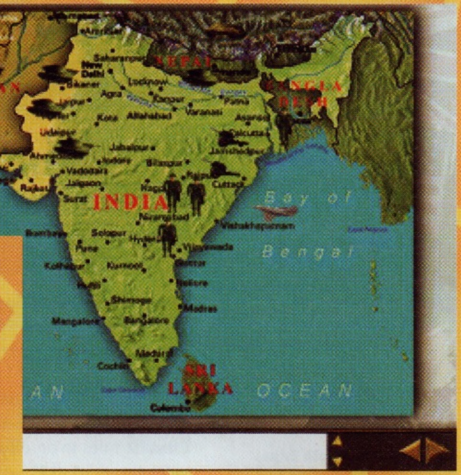
The people behind TVML are themselves writing games using the system (Wainwright has previously worked on conversions of *R-Type* and *Rampage*), but are also looking to lease out editor software to interested thirdparty developers.

At the moment, the games available on the TVML Web page are rather basic: a couple of 2D fillers and some quite promising 3D demos.

However, the company is getting together with a major publisher (which cannot yet be named) to work on two ambitious titles to appear in early 1997. 3D D&D-style romp, *Grymwood*, and Risk-style global domination game, *Absolute Power*, will both be released as stand-alone CD-ROMs with a built-in Internet multiplayer option. Players will be able to master the games alone and then go online to play them. Interestingly, when *Grymwood* is played over the Net, only the wireframe graphics will actually be passed from player to server to player – each player's own copy of the game will provide the textures – a novel way of getting around the slowdown problems associated with sending lots of data down the wire. Furthermore, TVML is planning to use Microsoft's *DirectDraw* APIs in its next batch of in-house games for a marked improvement in graphics.

Although designed for gaming, TVML may have wider significance. The language is, after all, an 'online multimedia authoring tool set' so ,like Java or VRML, it could be used by companies to create their own 3D Web sites. Whatever the case, and whichever 3D language eventually succeeds, it seems the Internet's text- and photo-based days are over. **E**

Site: TVML
Address: http://www.tvml.co.uk
Format: Online 3D graphics language
Origin: Abingdon, England





TVML Ltd is working on its own games including RPG *Grymwood* (left), and global domination game, *Absolute Power* (main)



The Chemical Brothers used a great TVML rollercoaster demo on their web site





TVML's own games will soon be released on PC CD-ROM by a major software publisher

Net gaming

Ultima Online

Origin is beta testing an online version of its best selling fantasy RPG, *Ultima*. Players can talk and fight realtime with other users and customise the look of their own characters.

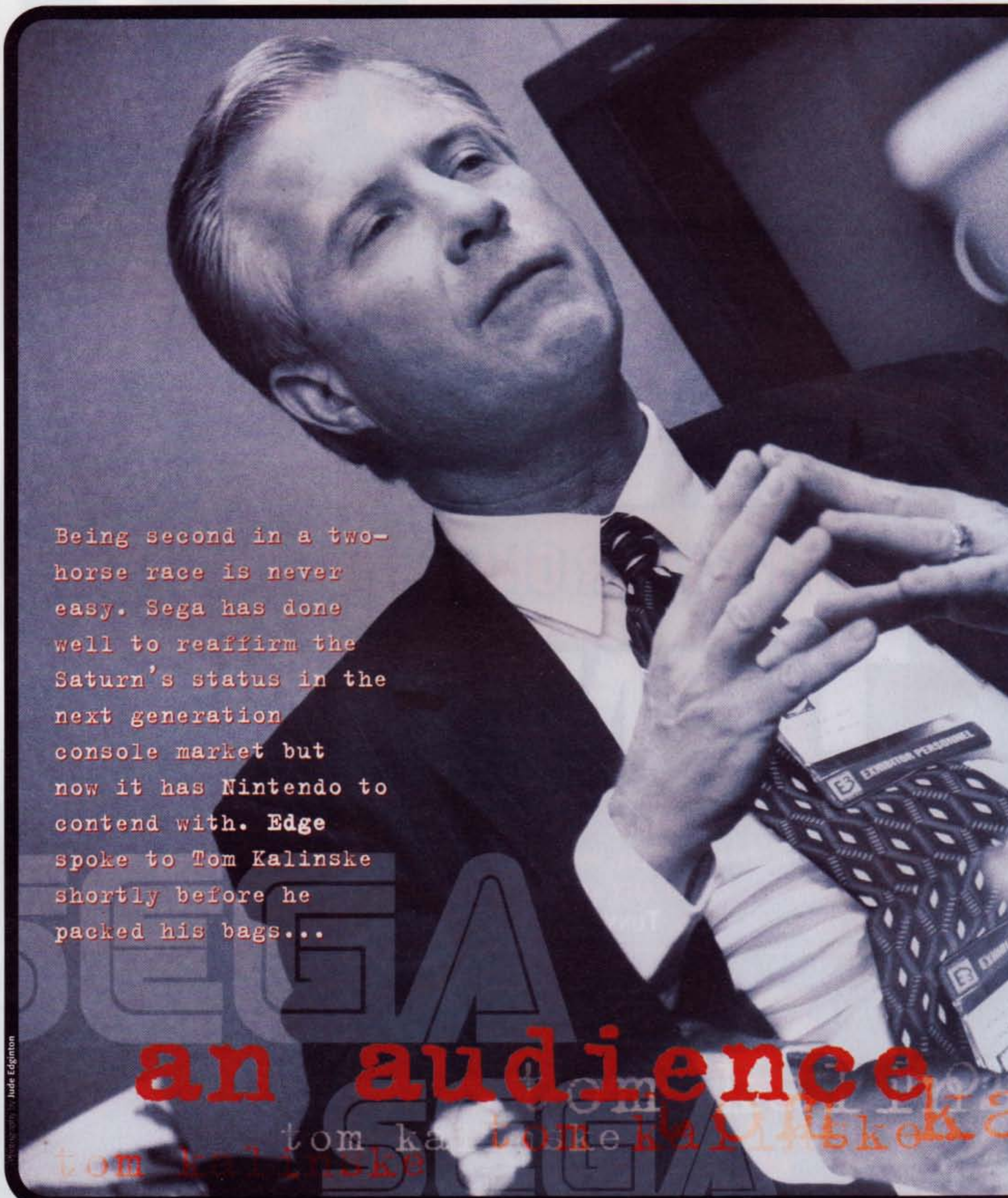
Ultima Online, due out on CD-ROM this winter, is described by Origin as 'an on-going, ever-changing world of adventure, complete with 3D terrain and SVGA graphics'. 1,000 gamers participated in the April test, with 150 online simultaneously at any one time. Apparently, the company received very positive feedback from participants.

Sim City 2000

Another title coming to the Internet soon is *Sim City 2000*, the strategy classic from Maxis.

Players will be able to collaborate realtime in the construction of a city, holding meetings and agreeing on resource management. They will also be competing for landspace and the player who owns most scores better.

SC2000 will be available on PC CD-ROM from July '96.

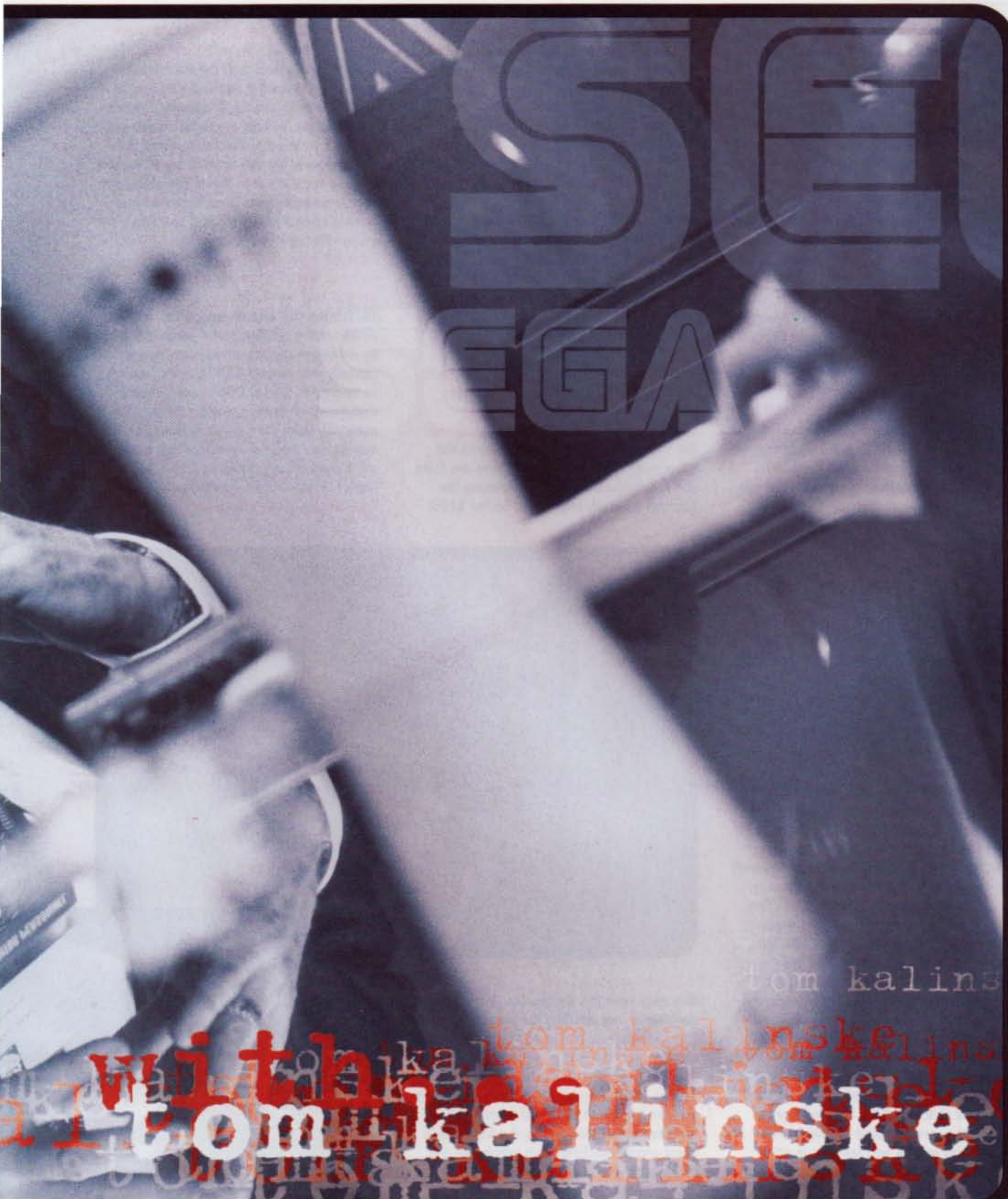


Photography by Jude Edginton

an audience

tom kalinske

Being second in a two-horse race is never easy. Sega has done well to reaffirm the Saturn's status in the next generation console market but now it has Nintendo to contend with. **Edge** spoke to Tom Kalinske shortly before he packed his bags...



with tom kalinske

interview

Continued

Sega may still be the underdog in the home videogames arena, but now its credibility is a lot more intact than it was 12 months ago. It has proved it can outperform Sony's PlayStation with games such as *VF2* (many programmers maintain this game would be an impossible feat on the PlayStation). It has shown it can compete on price terms with its £200 Saturn. And it has even taken the online initiative long before its rivals. **Edge** spoke to the company's bullish US president shortly before he decided that Sega was no longer for him (see news). Bid a fond farewell to SOA's king of hype, **Tom Kalinske**...

Edge What do you think led to Sony dropping the PlayStation price to $199?

TK I think they're reacting to the Saturn dropping to ¥19,900 (£120) in Japan, which then started out-selling them even more dramatically than it was at Christmas time. I was in Japan in April, and you couldn't find a Saturn on the shelf.

In Japan they're about to announce the three millionth Saturn sold through to the consumers. I think Sony's probably done just over two million. That's a big difference. It's something we don't see in Europe and the US, but you can bet they view this pretty damn seriously at Sony headquarters in Japan.

Edge You think Sony's scared of the Saturn?

TK Absolutely. We've got great software. We do, after all, have three 32bit processors in the Saturn, which initially people had problems with, but today I believe developers are saying, 'You know what? We can do more and more with this. We're realising that we've only been utilising some small percentage of the Saturn's power, whereas in the PlayStation, we're pretty well maxxed out at 80% or so of the capacity.'

And then we've got the NetLink. This thing is researched off the map. I mean, I've seen a lot of research in my life, but... people really want to connect to the Internet, and a whole lot of them don't have $2,000 to buy a PC. Interestingly, the people who do have the money and have spent it on the PC also want to connect via their family room, because everybody sees the added benefit of being able to share what's on the Internet with a larger group of people in front of the TV. And then, of course, they are also able to play games online with groups and families in other parts of the country. It's a very important, very highly researched product.

So I think Sony said, 'Oh my God, they've got a network link-up here; they've got an Internet peripheral; they've got better software; they're killing us in Japan, we'd better do something.'

Edge But Sega's peripherals have traditionally been disasters. If you look at the Menacer, or the Activator, or the Mega CD, or the 32X...

What makes you think the NetLink will be any different?

TK Historically, that would be correct. But this is different – everybody knows that a fast modem alone is around $200. So here we're talking about a 28.8bps modem plus special chip that allows it to do what it does with the Saturn, and browser software – all for just $200. I think everybody will recognise the value in that.

Edge So you think the NetLink could make the Saturn attractive to the people who aren't interested in gaming but *are* interested in getting on the Net for cheap?

TK Sure. We still believe the Saturn's the more essential purchase, but there are folks out there who believe that browsing the Internet's awfully important. So for $200 they may view this decision as, 'Which is the peripheral and which is the primary?'

Edge So you'll be marketing the Saturn with the NetLink as a way of getting onto the Internet for less than $500?

TK Yes, but it worries me a little to associate our products with the word 'computer'. I like the idea of positioning the Saturn as a great games machine, with which you can now access the Internet – which provides entertainment, too.

Edge A lot of people say that Sony's decision to drop to $199 has a lot less to do with Sega than it has to do with the N64...

TK The whole deal with the Nintendo 64 depends on whether you really believe in what Nintendo's doing, I suppose. If you're Sony and you believe in it a lot, maybe you'd be more inclined to react to it. From our point of view, we still want to see it, we still want to see if it's real. We've had three or four announcements from Nintendo that haven't been lived up to. And so I don't know what to think on this.

Edge After seeing 100 Nintendo 64's running real software, it's probably safe to say that it is real, Tom...

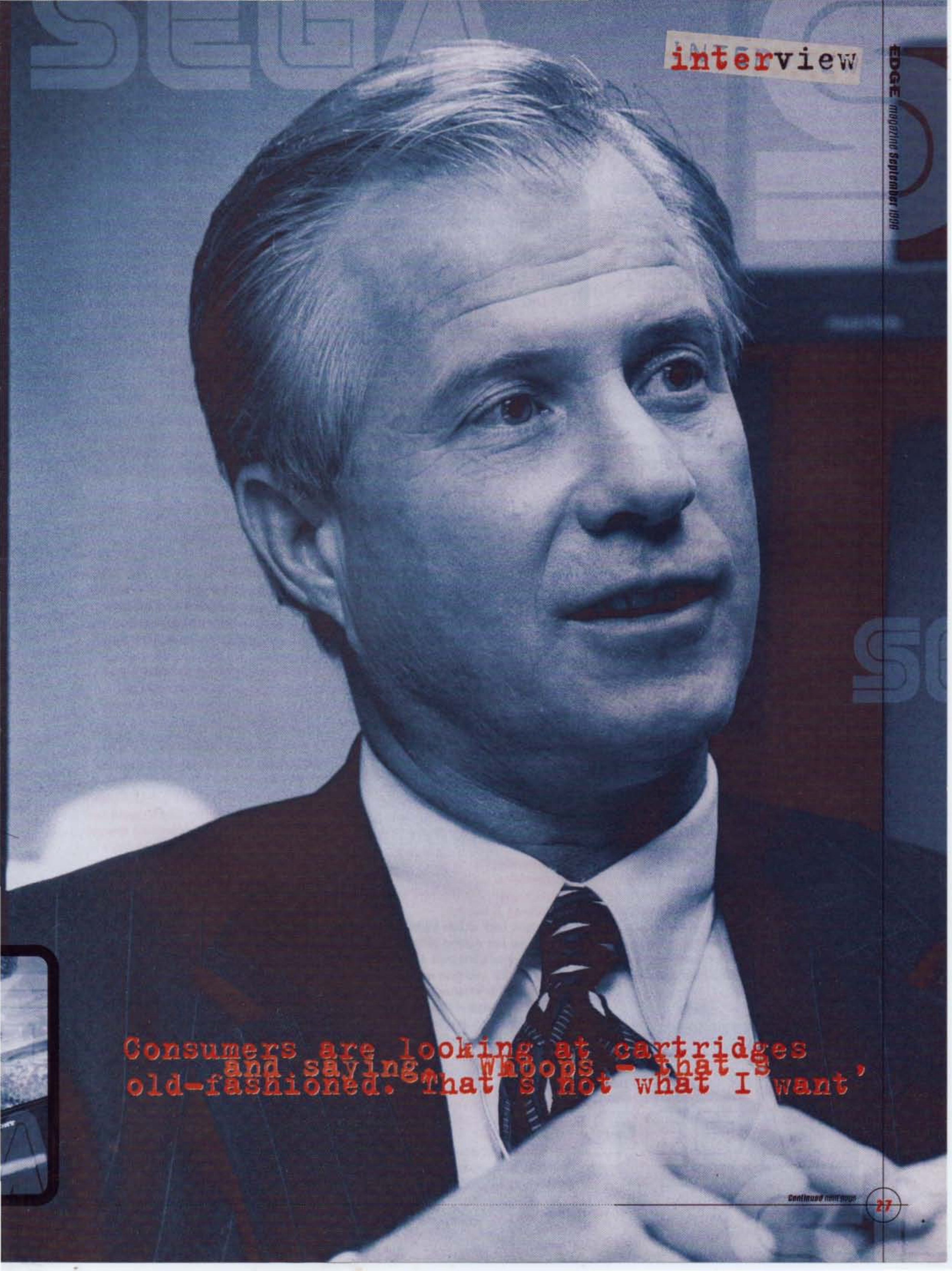
TK But it is still a cartridge system, and we all know the problems with cartridges from an inventory cost standpoint [cartridges typically cost around $30 to manufacture, compared to $5 for CDs]; from a retailer standpoint [they have smaller profit margins]; from the thirdparty licensee standpoint [who don't want to risk being stuck with unsold games at $30 a go]; and from the consumer's standpoint.

Edge What's the problem with cartridges



You start playing *NiGHTS*, and you can't put it down: it really is that compelling and addictive





'Consumers are looking at cartridges and saying, "Whoops – that's old-fashioned. That's not what I want"'

Continued next page

from the consumer's standpoint?

TK Our research says that the consumers who are already moving toward 32bit or moving to the PC are looking at cartridges and saying, 'Whoops – that's old fashioned. That's not what I want to do any more.'

Edge What's old fashioned about games that don't take time to load up? And you yourself managed a cartridge market very well in the 16bit era and made a whole lot of money. You could probably do it again, if you had to. So why can't Nintendo?

TK The 16bit cartridges cost a lot less than those for the N64. I understand that the hard cost was going to be something like $50. That's nuts! Who wants to take that inventory risk?

Imagine you're launching a hit game. So you're going to make one million of game X, costing $50 each, before you sell any. That's $50 million tied up in inventory – you've got to be crazy to make that kind of a decision. It's certainly crazy for the retailers to go along with you because if the product doesn't sell they suffer with all the overstock and they've got to come back to you for the mark-down money and it messes up the market place.

But if it's a CD-based product, and you made that same error, your mistake and true cost is a lot less. So from a financial point, cartridges don't make sense.

Edge Nintendo will counter this by saying that because it's releasing only a small amount of games, it can work only with people who can afford to take this risk and ensure all the games will sell well.

TK Never in the history of videogames has a hardware manufacturer been successful without widespread thirdparty support.

It didn't happen with Atari, nor with Intellivision – which was why these systems failed. Thirdparty support was necessary for 8bit and 16bit. So while it may be easy for Nintendo to say these things, I think they need thirdparty support. You need a broad selection of product out there in order to have the consumer pay this kind of money for a system.





Edge Can *NiGHTS* do for the Saturn what *Sonic the Hedgehog* did for the Mega Drive?

TK I believe it can. It's as different. When *Sonic* came out it was seen as a totally different type of play, primarily because of the speed of the character. *NiGHTS*, too, is similar in a different sense – it's the feel of playing this product. Yes, it visually looks great, but it's the feel that's so enjoyable. You start playing it, and you can't put it down. It really is compelling and addictive.

Edge Sega has AM2's **Yu Suzuki** and Sonic Team's **Yuji Naka**. Obviously, Nintendo has **Shigeru Miyamoto**. Is it hurting Sony that they don't have one star game developer?

TK Oh sure. You've got to have a thirdparty line-up, but you also have to be able to do it yourself. So, you know, I look at my two competitors and I see Nintendo doesn't have the thirdparty support. Sony has thirdparty support but doesn't have the internal development capability. Sega, has both, so that's why again I have great hope for the future.

Edge Despite how you carve up the market share, speculators say that 32bit, as a whole, just hasn't happened in the numbers people were expecting. Is this true?

TK If you look back at late 1989 and 1990 when we were just starting 16bit with the Mega Drive, we sold less than 400,000 the first year in 1989, and then we sold about 450,000 in 1990. So, after a year and a half we'd sold about a million units.

Now take a look at what's happened today. Either us or Sony will sell far more than that. By the end of 1996, the total Sony-Sega sale combination will show an adoption rate way ahead of 16bit.

Edge Have the high prices of next generation systems (compared to 16bit) affected things at all?

TK Interestingly, the pricing's kind of comparable. If you took 1989 prices, the MegaDrive was $199. Translate that to today's prices, and it's probably about $250.

So the 32bit adoption is far faster than I think one of my friendly competitors – whom I won't mention – would have you believe. You know, he said, 'Oh, gee, 32bit isn't happening,' purely because he has this other large Japanese company breathing down his neck. But it's simply not true. The adoption rate is far faster on 32bit than it was on 16bit.

Edge When you look at the Nintendo 64 software, do you see it as a leap over and above either yours or Sony's current 32bit software?

TK I haven't had the time to really study it, but I don't think it looks any better than *NiGHTS*. I think *NiGHTS* looks – to me – to be a superior game.

Edge SegaSoft makes sense in lots of ways – Sega makes great games, and it's good for gamers on different platforms that they get to play them. But if SegaSoft publishes a game on the PlayStation, it has to hurt the Saturn, right?

TK First of all, SegaSoft has not published a game on the PlayStation yet. They're publishing on the Saturn and PC through this year. We're trying to set that company up as an independent software publisher – like Electronic Arts, for example. Therefore, it really should be publishing on any viable platform. Of course, I can quite easily say that, but all the time I'll be thinking, 'I hope that other viable platform is no threat to the Saturn.'

I think if you want to set this up in a way where it makes sense to the employees in the company, you have to live with that kind of conflict. Now, at the same time, I think that Sega of America is going to prove to SegaSoft that they should be sticking with the Saturn and the PC as opposed to our direct competitors.

Blade

Just as the hype over id software's *Quake* begins to die down in the excitable world of PC gaming, a new 3D title looks set to start the ball rolling again









Rebel's Diaz-Bustamante on what *Blade* has that *Quake* doesn't: 'Lights, shades and shadows in realtime; high-colour graphics, a complex articulation system; realtime skeletal deformation; realtime inverse kinematics...'



Rebel isn't afraid of clichés, as the presence of this muscle-bound hero amply illustrates

Format:	PC
Publisher:	Friendware
Developer:	Rebel Act Studios
Release:	Autumn
Origin:	Spain

Madrid is perhaps one of the last places one would look when scanning the globe's videogame development community for innovation, but burgeoning outfit Rebel Act Studios is crafting technology which looks set to put the city it calls home on the map in style.

Its new PC 3D engine, developed specifically for firstperson-viewed combat adventure, *Blade*, but due to appear in three other titles in the future, looks like giving *Quake* a run for its money with its complexity. Capable of supporting display formats from 320x200 with 256 colours to 1024x768 with 16bit colour, it generates true 3D environments which can be enhanced with a expansive array of spot special effects.

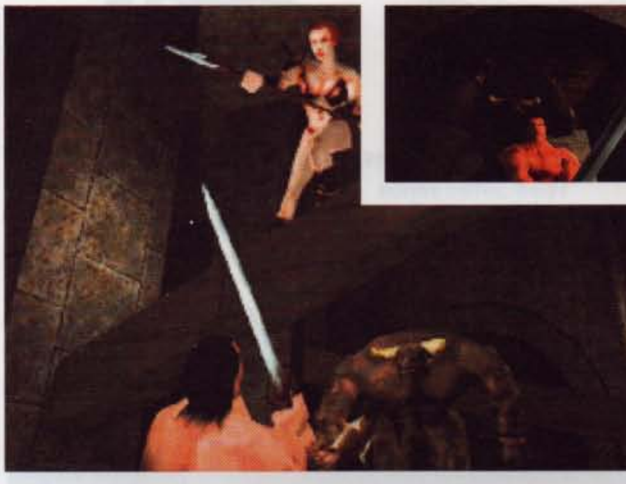
As well as featuring realtime, moving light sources (capable of casting specular light) visually the game offers what Rebel call 'dynamic lighting effects' and realtime shadow casting, along with fire and water effects and scenery which uses distance cueing.

The characters which populate this world are all full polygon models, produced with what Rebel calls a 'skeletal deformation system' – essentially a method which gives a figure more believable poise and movement.

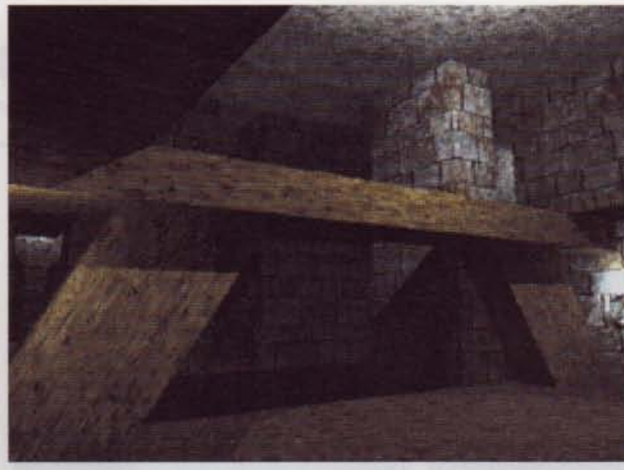
Blade has an immediate edge over its rivals by giving the player a choice of five different characters to choose from. Though their behavioural aspects differ slightly, each has a set number of actions

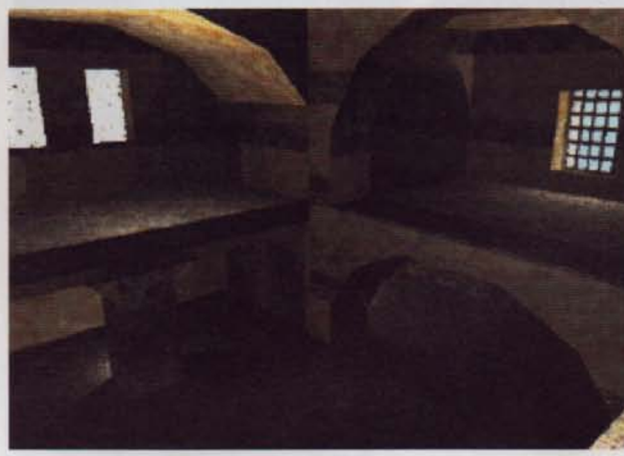


The game's outdoor locations give it refreshing variety, while some of its denizens, such as this example, haven't yet been seen in the genre



While you can fight with swords (hence the game's name), you'll also be able to throw objects around – even severed heads, gruesomely





***Blade*'s atmospheric interior architecture is evocative of the middle ages period in which the action is set. The moody lighting helps, too**



The staff behind, and the cast of, *Blade*: one big happy family

with which to navigate the game – running, jumping, crawling, swimming, and even flying (though how the latter option is going to be implemented within gameplay is currently unclear).

Combat with *Blade*'s enemies – of which there will be over 15 – will be conducted with an astonishing 30 different weapons, from hand-wielded varieties to ranged affairs. When involved in melees (hand-to-hand exchanges), detail even runs as far as leaving visible wounds on your enemy – which will no doubt do the game's genre little favours in avoiding the harsh glare of the videogames-are-bad-for-you brigade.

Over 20 different levels are promised to make it into the final game and Rebel's Juan Diaz-Bustamante sees their structure as one of the game's selling points: 'The levels are huge – bigger than in any other game of this type. Each has its own specific environment and story which moves away from a shallow arcade-type feel and helps give a feeling a atmosphere – indoors and outdoors.'



***Blade*'s bad guys may look similar those of *Quake*, but they're made up of more polygons, and, Rebel claims, their animation is superior**

Importantly for a PC release of this nature, *Blade* will allow up to eight players to take part simultaneously, either via a local or modem network. Rebel appears to have all bases covered with the game in fact, going so far as to make the game compatible with Virtual i-Glasses and a number of the new graphics-accelerator boards poised to saturate the home market (the team is impressed with the 3Dfx and Rendition boards but feels that it's too early to speculate about which is best).

Few could have expected a threat to *Quake* to materialise so soon after its arrival on the PC games scene, yet Rebel's effort is set to raise the stakes in a stroke. The fly in the ointment, as is always the case with PC gaming, is that you'll need some seriously heavyweight kit to truly appreciate *Blade*.

Start thinking about talking to your bank manager now… E





***Blade*'s realtime light sourcing and shadows are just two areas where it excels (above)**

Soviet Strike



Electronic Arts updates its highly popular 16bit *Strike* series by introducing the player to photorealistic, true 3D landscapes











Each of *Soviet Strike*'s levels has its own mission objective. Here the strike force helicopter scours southern Russia's black sea searching for Russian submarines (main) and other targets to destroy (left four pics)

Despite what certain right-wing pressure groups would have you believe, videogames are usually a phenomena completely separate from reality. Although strategy games will often base themselves on historic conflicts, the normal rule is this: games have no influence on real life, and real life has no influence on games. End of story. It is certainly exceptionally rare for a game to

The designers are promising realistic 3D models based on actual artillery and photorealistic terrains

be turned into a political gesture. But that is exactly what EA has done with its latest 3D flight shoot 'em up.

Soviet Strike, the follow-up to *Desert Strike*, *Jungle Strike* and *Urban Strike* is based on a currently rather important hypothetical question – what would happen if the newly found democracy in the former Soviet Union collapsed? In the game, this terrifying situation has happened and now it looks as though a revisionist ex-leader, known only as 'The Shadowman', may gain power and restore Russia to its previous communist status – an event cheerily referred to in the game as 'The Separatist Bloodbath'.

To prevent a full-scale war, the government call in Strike, an underground task force set up to prevent wars before they happen. The player assumes the role of a Strike member and must fly a helicopter on a number of covert missions against The Shadowman and his forces to ensure this menace never gains power.

In terms of gameplay, then, it sounds like standard flight shoot 'em up fare: blast enemy aircraft, blow up enemy





Photorealistic textures are streamed off CD and mapped onto the polygon landscape, providing breathtaking scenery to fly over

Format:	PS/Saturn/PC
Publisher:	EA
Developer:	EA Studios (PS) Tiburon (Saturn)
Release:	Autumn '96 (PS)
Origin:	US



***Soviet Strike*'s game designers in the early stages of a level's development**

ground craft, destroy enemy buildings, etc. As usual, players get to choose from a variety of exotic weapons, including Hydra and Hellfire missiles, and can also select from a number of camera angles. Interestingly, though, the game features what EA refers to as 'a living battlefield', where enemy troops and convoys react to each situation. This certainly makes a change from objects on the land conforming to preprogrammed routes like brainless bullet fodder. It is the flight model which is most important, though, and at the moment, this is an untested commodity.

Visually, the designers of *Soviet Strike* are promising realistic 3D models based on actual artillery and photorealistic digitised terrain. The latter includes 'entire landscapes' of non-repeating textures which will apparently be streamed off CD. According to EA, this interesting tactic will allow detailed terrains to be rendered over a very large playfield – obviously the intention being to avoid drawing in scenery at the last moment à la *Thunderhawk 2*. Hopefully, it won't mean that the scenery falters and shakes every few seconds while the CD tries to keep up with the action.

This isn't *Soviet Strike*'s only eccentric innovation. To accentuate the game's parallels with the real power struggle in Russia, EA is actually preparing a 'massive anti-war poster campaign', the centre piece of which will be a huge poster featuring the slogan, 'stop the war before it begins' placed next to McDonalds in Moscow. Whether or not such political activity is a good idea, **Edge** is uncertain: videogames tend to receive negative press whenever they invade the wider public consciousness, so the posters will probably read as sick exploitation rather than an attempt to diffuse any violent situation (remember what happened to Virgin's controversial poster campaign for *Command & Conquer*). Specious advertising campaigns aside, though, *Soviet Strike* will doubtlessly impress propeller heads throughout the world.







The Khyber levels, taking place in southern Russia, provide the player with a battle-scarred desert terrain. Expect tanks to appear frequently









The arctic Crimean scenery reflects the bitter weather conditions with icy terrains and bleak colours. Rather than following traditional *Strike* graphic design, for the 32bit incarnations Electronic Arts has dismissed the isometric look of old and adopted a more attractive, true 3D, environment

Turok: Dinosaur Hunter

With the 3D platform game genre sewn up thanks to *Super Mario 64*, the N64 is now aiming at other areas. Acclaim's *Turok* is the proposed *Quake*-beater



Interior sections are in stark contrast to the organic nature of *Turok*'s jungle. The enemies remain as dangerous to rumble with, of course



With *Turok*, Iguana's Dienstbier promises that 'the firstperson game is about to bust out of the 2D-3D shackles and enter a world of total 3D'

As one of the Nintendo 64's first thirdparty games to get a visual airing (albeit via a dodgy *QuickTime* movie made available over the Net), *Turok: Dinosaur Hunter* initially looked like a typical me-too *Doom* clone produced merely to fill a gap in the N64's release schedule.

Since then, however, **Edge** has been able to experience the game in action, and the evidence appears to give credence to developer Iguana's position (via parent company Acclaim) as part of the much-vaunted 'Dream Team'.

As **David Dienstbier**, the project manager and lead designer behind the game at Iguana, reveals, this is not simply another *Doom*-alike: 'Our biggest goal for *Turok* was to not only create a world where every element was a 3D object, but to make it seem alive. Our jungles are very organic – the hills, ridges, cliffs and caves are in stark contrast to the lifeless quality that seems to be a problem with many firstperson games. The jungles are full of true 3D plants and trees and our vines are real 3D objects. The finished environments will be full of 3D animals such as monkeys and birds, as well as evil enemies such as dinosaurs. We set out to not only create a 3D dinosaur, but to set new precedents in terms of animation quality and realism – and we've applied this standard to every







***Turok*'s scenery is promised to be 'fully interactive' – but how far will that extend?**

Format:	Nintendo 64
Publisher:	Acclaim
Developer:	Iguana
Release:	Sept 30 (US)
Origin:	US





The Iguana team are particularly enthusiastic about *Turok*'s choice of weapons, which ranges from a simple bow and arrow to a shot gun to a grenade launcher; weapons not true to the *Turok* comic-book universe were even brought in







As with its peers, *Doom* and *Quake*, the focal point in *Turok* is combat. And it promises to be one of its strengths, as Dienstbier reveals: 'It's an absolute blast to get the grenade launcher or the quad-rocket launcher and spend a few rounds bouncing enemies around their environments.'

single creature in the game. I firmly believe *Turok* showcases some of the best animation ever seen in a videogame. And it's all in realtime.'

A firstperson shoot 'em up, the game is based around characters and settings from the Turok comic book, published by Acclaim Comics. But Dienstbier's team is eager to produce a game that's far from the typically average quality of Acclaim's licensed titles, by presenting several new twists on the now-established firstperson shoot 'em up: '*Turok* also features a much larger degree of freedom than

'The jungles are full of true 3D plants and trees and our vines are real 3D objects'

David Dienstbier, project manager, *Turok*

firstperson games such as *Doom*. Players can swim in true 3D – we're not simply producing a fudge of the above-ground control mechanism – as well as climb sheer surfaces. Exploring the maps thoroughly is very important if players want to discover all of the hidden areas and items in the game, so giving the player a larger degree of freedom is very important.'

So what is the game's greatest strength? 'Turok's best quality, in terms of what people who play the game react to, is the level of realism that the characters and creatures convey. I've watched a lot of people play it, and the reactions that they give when they see certain animations, or blow enemies through the air, has been great. It really makes all the difference when you are trying to create an immersive environment for the players if they really get the sense that the denizens of that world are alive.'

Shigeru Miyamoto's team has set a high standard with *Super Mario 64* – how does Turok compare to its greatness? 'Wow. I don't think it's possible to compare *Turok* directly to *Mario 64* – the two are polar opposites. Both games are doing a lot of really impressive stuff. I can say that where *Mario 64* has set a new precedent in its own right as far as recreating the cartoon-style platform game, our ambition is that *Turok* will set precedents for other games in the firstperson genre.'

With *Quake* already impressing the heck out of most who've seen it, Iguana certainly has its work cut out. *Turok* cannot compete with id's game at the same level because it has no networking abilities, leaving Iguana the task of crafting a strong solo experience.

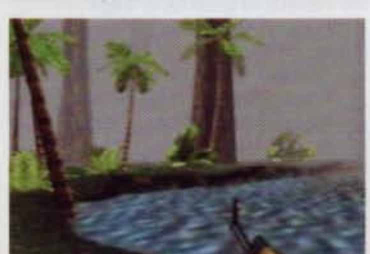
The N64's muscle should make the job easier, at least...





The game features enemies including dinosaurs, 'bionosaurs' and robot droids





It'll be possible to view *Turok*'s world from any angle (left). The game has a dedicated swimming routine





The N64's Silicon Graphics-derived power allows for a host of remarkable explosion effects during gun battles (right)

Theme Hospital

Bullfrog, master of the simulation videogame, has directed its latest project toward the struggling National Health Service







Pop-up menus present the game's options. Should you buy a computer or a new doc?

Earlier this year, when it looked as if the entire software industry had become irreversibly obsessed with 3D graphics, *Civilization 2* came out, scored top marks everywhere and proved that, yes, shock-horror, a game doesn't have to be in 3D to be brilliant. Now, just when it looks as though the software industry had forgotten this simple lesson, *Theme Hospital* may just remind them.

Like its predecessor *Theme Park*, *Theme Hospital* is a light-hearted business-management game. Players begin with a set amount of money and with it they have to buy enough land, doctors and equipment to set up a small country hospital. This establishment must then be run with profitability in mind: to make more money, players can try to find the cure to major diseases (testing their concoctions on unwitting guinea pigs/patients) or they can cut expenditure by hiring student docs instead of experienced veterans – both lines of action potentially courting disaster, of course. If by some miracle any player manages to turn their hospital into a money-making machine, they are promoted and go on to administrate for progressively bigger infirmaries.







In *Theme Hospital*, players can design and build their own hospitals then watch as patients pour in – the opposite of government policy

Patients suffer from things like 'bloaty head', 'lack of fashion sense' and 'hairyitis'

Running a hospital might not sound like a laugh-a-minute activity, but Bullfrog, with characteristic disregard for reality, seems to have injected much humour into the scenario. For example, there are very few real ailments in the game (in the interests of good taste, **Edge** suspects), so patients suffer from things like 'bloaty head', 'lack of fashion sense' and 'hairyitis', all of which are pretty much self-explanatory. Watching these poor unfortunate souls wandering around the gorgeous high-res hospital buildings is most entertaining, and the fact that there are over 1,000 different characters in *Theme Hospital* should keep the novelty aspect going well into the game.

The network option also looks promising, allowing four players to set up rival hospitals in the same district. Bullfrog told **Edge** that, throughout the game, it will be possible to refer highly infectious patients to competitors' surgeries – the sort of underhand move which really makes these games worth playing over a LAN.

Previous evidence has shown that if any company can produce a marvellous game from the least promising or difficult-looking materials, it's Bullfrog. Hopefully, *Theme Hospital* will cement this reputation.



Cartoony prerendered scenes spice up the graphics, but what is this doctor about to do?

Format:	PC CD ROM
Publisher:	Electronic Arts
Developer:	Bullfrog
Release:	November
Origin:	UK

Assault Suits Leinos 2

The evolutionary path of Japanese sideways-scrolling shoot 'em ups has led to an update of a classic example for the Saturn





***Leinos 2* demonstrates perhaps the most impressive use of the Saturn's scaling abilities yet, with smooth reframing of the action**

Those familiar with the Super Nintendo's vast back catalogue of software will no doubt fondly recall a release from 1993 called *Assault Suits Valken* (or *Cybernator*, as it was known when it was released later in the west). Packed with robots and combat exoskeletons, it was the game that introduced many UK gamers to classically Japanese design values – not only because it was a class title looks-wise but also because it overflowed with action and atmosphere.

It's little surprise that a successor should turn up on Japan's favourite 32bit console. *Assault Suits Leinos 2* (in actuality a sequel to the ancient Mega Drive title, *Assault Suits Leinos*, another NCS title) is presented in a very similar style to its forebears, with action viewed strictly from the side.

Starting out with three standard weapons you'll get the chance to use over 20 types during the game

Set on Earth in 2120, it presents the struggle of a band of 12 teams of ex-convicts as they battle with feuding factions over a famine crisis. It's classic left-to-right scrolling stuff, with raw shoot 'em up action at the top of the agenda.

One of the best aspects of *Valken* was its range of upgradeable weaponry, and this angle has been taken and expanded upon in *Leinos 2*. Starting out with three standard weapons – a cannon, laser and missile – you'll get the opportunity to use over 20 types as you progress through the game. And it's the use of these weapons that exploits the game's biggest visual difference to its precursors – depending on the range of your elected mode of attack, the screen scales to frame the action accordingly.

Along with a choice of weapons, players will be able to select from a range of armour styles, each type suited to protection from different forms of attack. Also, as you progress, you'll get the opportunity to use eight different types of assault vehicle.

Perhaps concerned that this level of comprehensivity might daunt the shoot 'em up novice, NCS has included two modes of play: automatic targeting, which brings enemies into your sights the moment they appear; and manual, forcing you to do the legwork yourself.

The game also features a difficulty level that adapts to the player's performance – certain enemies will simply not appear if you're doing poorly, for example.

The Saturn is home to more traditional 2D games than the PlayStation, and the appearance of *Leinos 2* on the machine can only reaffirm its place as the format of choice for gamers wishing to experience software that harks back to the glory days of 16bit. ∃







Anime-style characters make cameo appearances during the missions (above)



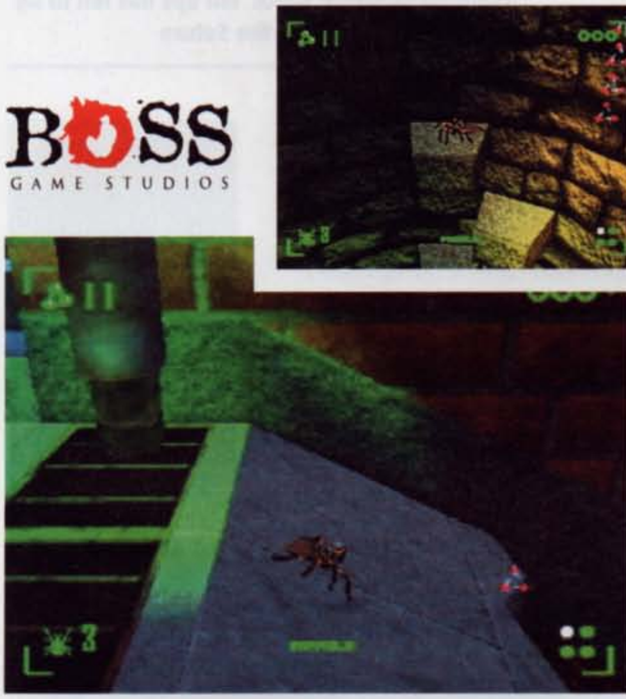


Veterans of SNES *Valken* will already be familiar with NCS' love of juicy explosions – *Leinos 2* features similarly effective varieties (left)

Format:	Saturn
Publisher:	NCS Masaya
Developer:	In-house
Release:	TBA
Origin:	Japan

Spider

Boss Game Studios offers a novel twist on the platform genre by creating a main character with eight legs rather than two





***Spider*'s 30 levels feature locations such as sewers, science labs and city streets. There's also an interesting bunch of enemies, including laser-equipped scorpions, giant bats and wasps with machine gun tails (main)**

Innovation often comes from the least likely sources. *Tetris*, one of the most compelling games ever, was developed in the deeply paranoid communist Russia of the mid eighties. Id was virtually unheard of until it released the truly relovutionary *Doom*, and now a young company from Redmond, Washington, may just have found a new slant, albeit a small one, on the much-exploited, but not much improved, platform game genre.

Because this is a cybernetic spider, its body can be equipped with power-ups

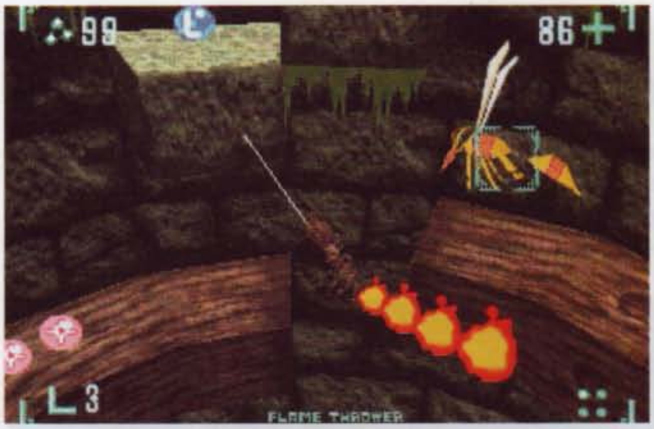
Spider is a 3D platform adventure. The player takes on the role of a man whose body has been stolen by baddies, and whose mind has now unfortunately been placed in control of a cybernetic arachnid. To regain human form, the player must crawl through all 30 levels of the game, in this clunky spider form, facing an array of 20 foes, ranging from cyber insects to 'mad machines'.

The fact that the player takes control of a spider is not just a neat cosmetic touch to make the game look a bit different – the arachnoid idea actually gives the platform theme a new slant. First of all, because the spider is cybernetic its body can be equipped with power-ups, discovered throughout the game. These come in the form of ten attachable legs, each equipped with a different weapon. The spider can accommodate four of these power-up legs at a time (perhaps it needs to keep four non-power-up legs for balance), and

Format:	PC CD-ROM
Publisher:	??
Developer:	Boss
Release:	??
Origin:	US



And the moral of the story is, never drink a day-glo yellow liquid given to you by a strange-looking scientist – you could end up in a spider





Spider **features traditional elements of the platform genre – tricky jumps, etc, although if the main character is a spider Edge can't understand why the creature doesn't simply crawl up the walls of this section (left). The spider launches a missile at a bat. Note the attractive light sourcing (right)**

there are a further five different defence power-ups to collect.

The spider will also be able to climb up walls and over ceilings – achieved by rolling the joypad from right to up when a vertical wall is reached. It sounds complicated, but **Colin Gordon**, vice president of product development at Boss, assures **Edge** it's an intuitive method: 'It feels natural, and we had no complaints at E³ – even the models hired to work the booth found it easy to play.'

A pathway system was devised for the player to move along, removing the worry of judging distance in 3D

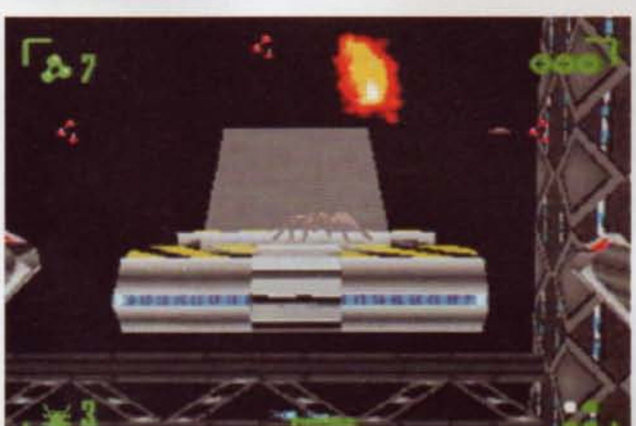


In line with the dark, cyberpunk plotline is a hard, realistic graphical style. 'A serious choice when we started this product was the look,' explains Gordon, 'In the end we felt that a 'real' look, such as *Doom*'s, would suit the spider better – after all, who wants a cartoony spider with baseball boots and a beanie!'

Deciding on a look was not the only predicament encountered in developing the game – the freedom given to the player caused problems for the designers, who felt players could become disorientated and confused by such freedom. To counteract this, a pathway system was devised for the player to move along, so removing the worry of judging distance in 3D and the 'am I facing the right way?' quandary. Gordon denies this is a means of restricting the play area: 'The path can go anywhere and can be branched and split, allowing the player to explore the entire 3D world, but without some of the problems that free-form movement can present.'

Boss has made the subversive decision not to offer the player a multitude of selectable camera angles – such an approach confuses players. Instead, the camera automatically gives the best view of the action. 'We keep the camera always on the spider, we just rotate it around the focal point to bring in a new view. We can also have the camera directly above, behind or even beneath the spider, so don't think of this game as a side scroller in 3D, because you'd be dead wrong.'

Despite the game's look and feel, Gordon is insistent on *Spider*'s unique qualities. 'The whole point is to play a new character who could gain abilities as the game progressed. On traditional games, the character can run and jump when the game starts, and at the end of the game they can run and jump – so we wanted more.' Boss has set out to create a true 3D platformer – not one which uses 3D merely as fancy clothing to cover up the moth-eaten string vest that is 2D scrolling gameplay. If it succeeds, the platform game will be a much richer genre.



In ***Spider*****, the camera view pans above, beneath and around the player in order to give the best view of the action. But will all these 3D effects hide an essentially 2D game? Boss's Colin Gordon thinks not**

Who's the Boss?

Set up 18 months ago, the Boss Games Studio is actually a subsidiary of Boss Films, responsible for the special effects in such movies as Ghostbusters, Cliff Hanger and, more recently, the Michael Keaton comedy, Multiplicity.

Sensibly, instead of trying to make games themselves, the people behind Boss Films (including Oscar-winning effects wizard, **Richard Edlund**), employed a diverse team of experienced developers from around the world. As Gordon explains, 'I was at Virgin and Ocean, but we have people who worked for Sega in Europe, Silicon Dreams, GraftGold, Imagitec, Microprose, even Psygnosis – we really are an international developer'. The company now employs 45 people.

Perhaps due to its connections with the film industry, Boss Game Studios seems to be a rather eccentric environment – Gordon himself declares: 'We have weird pets, we have classic arcade games set on free play, we have movie props, we even have people who like Chris Crawford!'

Boss is currently working on four new titles – two with BMG, one with Kemco and another as yet unsigned.

Little Big Adventure 2

***LBA* became an overnight legend when it was released on the PC a year ago. Can the sequel, which boasts beautiful new 3D graphics, rekindle that Gallic magic?**



Girls can't resist Twinsen and his stylish clothes





Through the use of texture-mapped polygons, Adeline has created a world of colourful and surreal charm. Although each scene takes nearly a second to render, this is not an arcade game – players probably will not notice the wait

It is very rare for a game to make such an impression that it is still referred to as a marvellous achievement, even when technically well out-of-date. *LBA*, with its isometric backgrounds and Gouraud-shaded characters is one of those games. A beautiful, surreal adventure set in a fictional world suddenly dominated by an oppressive force (Dr Funrock and his band of clones), *LBA* was a seminal PC title. It was not only an engaging adventure but also graphically stunning – even now the clean locations impress. For all these reasons, *LBA2* is perhaps the most desperately anticipated sequel since *Civ 2* – and Adeline obviously has no intention of disappointing fans of the original.

The most striking thing about the new title is its use of texture-mapped polygon landscapes. When the player is outside (internal locations are still viewed as bitmapped isometric layouts), each scene is rendered with complex textures and up to 10,000 polygons – a far cry from the Lego-block buildings and scenery encountered in *LBA*. Of course, this would be agonisingly slow if rendered in realtime as the player explores and the camera pans around, so





Inside (left) it's isometric, outside (right) all is 3D

Format:	PC CD ROM/PS
Publisher:	EA
Developer:	Adeline
Release:	December
Origin:	France







Contrasting with the sunny exuberance evident in most scenes, some sections of *LBA2* look positively moody and menacing (above left)

Adeline has developed an innovative control method. When Twinsen goes outside, the landscape is rendered for him in around a quarter of a second. He can then wander around in this view until he needs to switch camera angles (to see around a building, for example). To do so the player just positions Twinsen in the relevant direction, hits a key, and the new angle is drawn, again in a quarter of a second. This method can also be used to zoom into and out of the scene (which incidentally causes no pixellation – even on high magnification).

Due to the new method of displaying external locations, coupled with the improved use of textures, the scenery in *LBA2* looks staggering. The game still employs *LBA*'s stylised simplicity, but now the basic shapes have been embellished with much greater realism – tree bark has texture, walls are realistically mottled – making for a compelling, clean and artistic world.

New additions also include Twinsen's ability to drive vehicles around, an element which Adeline's **Frederic Raynal** claims makes up an important element of the story. There will also be much more freedom for exploration.



As well as adding new touches, mistakes made in *LBA* have been rectified. The save-game option has been changed so that players can now save whenever they like (in *LBA* the game saved automatically at certain points, which many players found restrictive), and Twinsen no longer loses energy when he accidentally runs into walls. Brought over from the first game is Twinsen's four modes of movement – 'discreet' (for creeping about), 'agile' (for running), 'aggressive' (for fisticuffs) and 'normal' (for walking) – although he can jump regardless of which mode he's in.

Although *Time Commando* turned out to be a disappointment, it is difficult to conceive of *LBA2* doing anything except charm the pants of anyone who looks at it. Adeline seem to have invested much character and humour into Twinsen and his world – just as **Miyamoto** does with Mario. It is no wonder Nintendo's premiere designer keeps trying to get Adeline on board the N64 express – as they always say in The X-Files, keep your friends close, but your rivals closer... **E**



It looks as though there is a vast, diverse world to explore in *LBA2*, but Adeline remains firmly tight-lipped about the finer plot details



Everything in the game seems to exude playful innocence – the simplicity of the landscapes, the cute characters – all very fantastical

Continued next page

Starcraft

Can the makers of seminal strategy game, *Warcraft*, repeat its success with a new space-based combat simulation?



In *Starcraft* you get to build an army and then guide it into space battle with two other alien races. Combat takes place over a number of different planetary and outer-space scenarios, all finely rendered



The realtime military strategy game has proved to be a popular and successful genre for the PC – maybe because it pleases the *Civ* lovers (tactics) and *Doom* fans (slaughter) without having to resort to flashy 3D graphics (something the PC still struggles with). In a now crowded marketplace there are two titles that stand out, *Command and Conquer* and *Warcraft 2*. However, not content to

In singleplayer mode you have to fight through 40 missions all linked to a generic campaign

share the honours with Virgin, the designer of the latter, Blizzard Entertainment, is about to overshadow both titles with a new spin-off from the *Warcraft* series.

Starcraft is a strategy game set in space. Acting as military leaders, players have to choose from one of three competing races – Terran, Protoss or Zurh (all different in terms of history and temperament) – and then build up the chosen species' army so it can engage in bloody interstellar conflict. After gathering the resources necessary to train and expand the armed forces, each army fights, with objectives being either freedom from another more oppressive race or galactic domination.

What looks set to impress is the sheer range of the game. In singleplayer mode you have to fight through 40 missions all linked to a generic campaign, the difficulty of which depending upon the player's performance in each section. Furthermore, there's an exhaustive range of options, including modem, Internet and eightplayer network play.

Currently setting the PC gaming fraternity alight with anticipation, *Starcraft* is poised to provide further proof that the future of PC gaming may not necessarily lie with predictable console-esque 3D graphics. E

Format:	PC CD-ROM
Publisher:	Sierra
Developer:	Blizzard
Release:	September
Origin:	US



In space, no-one can hear you say, 'isn't it about time designers stopped expending so much effort on prerendered sequences?'

Blue Ice

A surreal puzzle game is the last thing you'd expect from the company that brought you *Wipeout*. But *Blue Ice* is just that...







***Blue Ice* features a series of strange puzzles, and the weird visuals are intended to reflect this surrealism. Hence, flying fish (left), people floating out of eyeballs (centre) and spooky collages (right)**

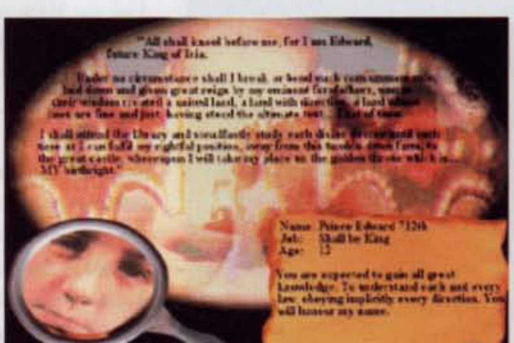
Psygnosis is a name more commonly associated with flashy 3D romps than obscure puzzle games, but *Blue Ice* definitely looks as though it will fall into the latter category.

At the moment the game is a bit of an enigma, its press release seeming to be more concerned with Tolkien-esque mysticism than game explanation. 'See through her eyes cascading colour illuminating the bleak existence of a forsaken nation,' is how one of the in-game characters is described in it, perhaps perfectly illustrating why so few public relations executives go on to become poet laureates.

Garbled prose aside, it appears that the game is set in a surreal world called Icia, where players, with the help of two characters, Hope and Edward, must work their way through 30 levels of weird puzzles. Psygnosis promises a 'unique surreal graphical style coupled with a beautiful, atmospheric story' and it looks as though, when the puzzle section is over, the player progresses to an adventure section – again, however, details are cloudy.

Blue Ice certainly looks rather interesting, but the question is, will it turn out to be a secondary project for Psygnosis? The company has, after all, made a strong 32bit reputation with titles like *Wipeout* and *Destruction Derby* – what place is there in its A-list for a PC/Macintosh puzzler?

Format:	PC CD ROM/Mac
Publisher:	Psygnosis
Developer:	In house
Release:	October
Origin:	UK





Not all of *Blue Ice*'s 30 puzzles are heavily graphics-based – some appear to rely solely on text (above). The exact nature of the game remains a mystery, however. Could this title show a new experimental side to Psygnosis?

Taroo Maru


Time Warner's use of textured polygons to generate backgrounds makes all the difference

Format:	Saturn
Publisher:	Time Warner Int
Developer:	In-house
Release:	TBA
Origin:	Japan

Taroo Maru is set in the Japanese Edo period (1603-1868) and presents two characters for selection: a child, the Taroo Maru of the title, and a Buddhist monk named Enkai. Both are curse killers, warriors in possession of psychic powers which allow them to attack enemies by the power of telepathy.

Despite its cosmetic resemblance to *Shinobi*, the game is shaping up to be quite different to play: rather than slicing your opponents with katana or puncturing them with shuriken, you target them from afar, attacking using one of five types of psychological weapon. Targeting is automatically controlled by the game engine, the enemy nearest the player being the default recipient of a mind-frazzle, though enemies beyond that also being free to select instead.

All those disappointed at Sega's own failed effort at producing a 32bit *Shinobi* game worthy of the series' name will no doubt be enticed by the prospect of Time Warner's stab.






Huge boss characters are an essential element and *Taroo Maru* obliges (top and left)

Top Gear Rally

For those wishing to make a comparison between the power of the N64 and its stablemates, the Saturn and PlayStation, a driving game in the style of *Ridge Racer* or *Sega Rally* would appear to be a fair litmus test. *Top Gear Rally*, the first of two N64 titles on their way from Japanese publisher Kemco, is thus poised to be the recipient of an awful lot of attention.

The game is still in very early in development – indeed, these shots are from an SGI version running under emulation – but Kemco's influences are already clear, with rally-like environs that, on the surface, ape Sega's popular title.

There are presently two vehicles to choose from – a Porsche and a nondescript off-road truck – but Kemco aims to include a broad selection of selectable modes of transport.

To avoid scenery 'pop-up', *Rally*'s developers are implementing fogging on the tracks (of which there are sandy, snowy and night-based variations).

A rally theme will obviously appeal to Nintendo's younger target audience than a straight-laced F1 sim, and if its coding equals its looks *Rally* could serve a valuable role in the N64's line-up.



Fogging effects are being used to combat 'pop-up', but their appearance will also enhance the game's clever headlight routines





***Top Gear Rally* uses courses based on themes that will be familiar to seasoned driving game fans, with sand- and snow-drenched levels**

Format:	Nintendo 64
Publisher:	Kemco
Developer:	TBA
Release:	Spring '97
Origin:	TBA

Blade and Barrel

Along with *Creator*, the 'life simulator' to be published through Nintendo, UK developers Software Creations is known to be working on at least another two N64 titles, the first being *Blade and Barrel*.

The player must fly copters or drive tanks in a combat sim taking place over a variety of terrain including deserts, factory sites and towns, and features a host of enemies, both of this world and alien.

BAB is an out-and-out action title. Set over more than 20 levels, the objective is one of destruction – a simplistic scenario enhanced by the presence of numerous power-ups (missiles, shield upgrades, repairs and speed-ups) and a focus upon multiplayer gaming.

Making use of the N64's unique input capacity, it allows up to four players to take part simultaneously, the screen being divided as appropriate. With more than two players it won't be possible to control an individual vehicle, however – one player will steer and the other fire.

Only 40% complete, *Blade and Barrel* currently lacks the visual flair of *PW64*. But Kemco promises the finished version will be more attractive, and the multiplayer capability alone should ensure it avid interest.



The finished game will feature two types of both helicopter and tank



Format:	Nintendo 64
Publisher:	Kemco
Developer:	Software Creations
Release:	1996
Origin:	UK



***Blade and Barrel*'s split-screen mode will inevitably force a trade off in the level of detail**



Criterion Studios



The entire staff of Criterion Studios pose for Edge in 1950s' garb. The development team dressed up specifically for the shot, which took an entire day to refine. The man smoking the cigarette (left) is Simon Meldrum, programmer on *Scorched Planet*. The gentleman sitting on the suitcase is David Lau-Kee, managing director, and Jonathan Small, head of games development, is the gentleman reading the book with his hand in his pocket (right, in the background). Jude Edginton was the photographer

It has the technology. It has the backing. And it has some peculiar ideas about life beneath the waves. Edge meets Criterion

There's a current trend in videogaming for commercial conglomerates to attach the tagline 'interactive', 'new media' or '-soft' to their name and 'get into' videogames and multimedia, treating electronic entertainment as just another commodity and bringing neither inspiration nor talent to their new discipline. Canon, however, took a smarter, altogether more promising route – it formed Criterion.

When asked to set up a European research and development centre, **David Lau-Kee**, then a staff man at Canon Research, created Criterion Software, of which he is now managing director. The route from designing technology through to graphics engines and then games is best explained by Lau-Kee: 'The work I was doing involved interactive 2D image processing. As an extension to that, we were looking at 3D image processing, which in turn led to out-and-out 3D graphics.' The long-term view for Canon was to develop multimedia tools – to build up a technological base on the software side that would reap rewards over the next decade. But quickly the technology and talent was turned over to entertainment, as Lau-Kee explains: 'The games thing is more of a Criterion than a Canon thing. As well as interesting us as individuals at Criterion, games are where the leading edge is at. If you want to see the best use of 2D, 3D, image processing, sound, then it's all in games. And if you want to be ahead in ten years time, then you've got to be up on games.'

Criterion Software first launched its development tool, *RenderWare*, in 1993. A C library offering fast 3D texture-mapped graphics and slick realtime rendering, it's used by over 800 developers worldwide, including Intel, SGI and Netscape, as well as having an almost complete dominance of the PC CAD market. At its launch, Criterion produced a prototype demo of its technology, called *CyberStreet*. Light on playability, it offered a tantalising glimpse of what could be done with its software, with a realistic 3D world with high-quality perspective texturing and complete freedom of viewpoint. The other 'flagship' releases were developed by 47Tek and

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Sub Culture, announced only months before completion, looks set to look and play better than Bullfrog's long-awaited sub-aqua adventure, *Creation*

were, sadly, pretty diabolical. The efforts of 47Tek to create true 3D fighting games in the form of *Sento* and *Creep Clash* showed everything that was wrong with rendered graphics two years ago. Smooth, shiny forms in which you could count the shapes went through a pitiful series of moves with fantastically disappointing results.

There's something about developing your own proprietary set of 3D routines. You put them on a pedestal. You admire them. You make money from them. But it's never really enough. Engine designers watch developers and can't help but feel they could do a better job. Argonaut couldn't resist designing a game or two to showcase its *BRender* libraries, turning out the entertaining *FX Fighter* and the poor *Alien Odyssey*. Criterion Software felt much the same way. In short Criterion needed something more impressive to put its name to.

That's why, in January 1996, the Guildford-based tools house launched Criterion Studios. Already employing some 35 people the studio has three projects lined up for this year alone, offering something that just a graphics engine never could – playability and a compelling storyline. *Scorched Planet*, *Sub Culture* and *Aqua'Tak* are coming.

If you want to see the best use of 2D, 3D, image processing and sound, then it's all in games

Scorched Planet is looking strongest in the Criterion crop – a game which, for all its fancy 3D trappings, has its feet firmly rooted in the Williams coin-op classic, *Defender*. The similarities between the two are clear, as Lau-Kee reveals: 'The ancestry owes a great deal to *Defender* – in terms of some of the emotions we were trying to drag out of players.' The game puts you in the cockpit of a morphing vehicle on a rescue mission to save the last human colony from alien attack. The planet in question goes by the name of Dator 5 – a planet which, unfortunately, has found itself in the migration path of an alien race called the Voraxians. Swooping from a mothership and plucking unlucky humans into the sky, your mission is to recover the little bods and carry them to a teleport gateway for escape offworld.

The vehicle you get to pilot in *Scorched Planet* has two very distinct modes. Airborne, you're in control of a nippy, weapon-packed, highly



Criterion's *Sub Culture* development team, here seen taking their propensity for water-based action perhaps just a little bit too far...

Criterion Studios

Criterion, formed in December 1993, is a wholly owned subsidiary of Canon



These wireframe models are for actual in-game objects, not prerendered scenes









The levels in *Scorched Planet* certainly look busy, but whether anything lesser than the most powerful modern PCs will be able to handle this amount of detail efficiently is certainly open to speculation. The creatures' shadows are especially impressive

manoeuvrable fighter. Weaponry on offer includes lasers, sonic blasts, proximity mines, homing missiles and scatter lasers. The problem with the fighter, however, is that it's heavy on fuel – you'll be needing something else to get around. Run out of fuel in the air and, after a last-minute verbal warning, your ship will morph into a tank and do a comic tumble from the sky with top-notch dynamics. Levelling up you find yourself at the wheel of an armour-plated tank. Although it moves slower, the tank banks and tilts as it roams the planet's varied surface and, of course, you get to fool with a more tank-like selection of weapons, including cannons, grenade launchers and machine guns.

So while most of the time you'll want to be zipping across the planet surface in the jet you'll instead find yourself trundling along the ground angling your

Engine designers watch developers and can't help but feel they could do a better job

cannons sky-ward. 'Originally the game design involved just the plane,' explains Lau-Kee. 'But then we found that you needed a slower craft when you were going through the cities. We tried to slow the plane down, but didn't like the way it handled – this led us to the tank concept. Being able to morph the vehicle mid-game makes the whole thing much more transparent in terms of playing it and operating it.' One control capability is the snap 180-degree turn you can pull



Scorched Planet* puts you into the skies in a mission, based upon Williams arcade's classic *Defender*, to protect these fleeing citizens

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by tapping the reverse key – not in there to enhance realism but a gameplay touch borrowed from vintage *Defender*.

Predictably there are both flying and ground-based enemies to take out. The designers have gone for an organic, animal style for all but the mothership, which has echoes of the massive flagship from the movie, Independence Day – quite a daunting prospect for first-time players. Best to take out the swarms of pterodactyls who, one-by-one, swoop to pick up humans. The other skyborne enemies, including wasps, bats,

One control capability is the snap 180 degree turn – a gameplay touch borrowed from *Defender*

mosquitoes, hawks and dragons, are all out there to attack cities and you. The ground-based enemies will have a bigger variety of movement and attack habits. For example, the spiders cocoon humans, turning them into zombies after 15 seconds. These green zombies then run around infecting other humans, forcing you to find some anti-venom to cure them. Then there are lizards and newts who simply can't wait to devour your humans, and snowball-hurling yetis. On the ground there's even a breed of human, the soldier, who fights back against the aliens.

Set across six different game worlds, including volcanic, ice and agricultural varieties, and offering fully texture-mapped terrain with undulating water, enormous depth of field (eschewing the usual mist effects on the horizon) and the ability to be played in SVGA 640x480 mode, *Scorched Planet* is looking pretty decent.

Criterion Studios' second original game, *Sub Culture* (formerly *Dive!* in the US), casts the player as a quarter-inch-tall character who lives beneath the sea, out to save two fighting races, who share your size, from each other, and then from the human race. It's earth-dwellers who are firmly cast as the bad guys – wanton polluters wiping out marine life, creating strange mutated fish and choking the water-people's food chain with toxins.

A free agent with affiliations, though no loyalty to either tiny clan, you're expected to enact missions for both sides, trying to bring peace and alert the human race of their shabby conduct.

Piloting a mini-sub complete with spotlights, you start out exploring the sea base, stuffed with landmarks, rock



One neat twist to *Scorched Planet*'s gameplay is the ability to convert the jet plane into a roaming tank, in order to travel through cities





Some of the fire effects are quite spectacular (volcanic eruption, right). Clever texture mapping ensures the alien atmosphere of the planet is realistically portrayed as the craft flies above

formations, caves, abysses and, of course, loads of rubbish. The realtime rendering of the underwater world is very impressive, with the aqua-marine lighting stretching *RenderWare*'s abilities – Gouraud alpha channel rendering is used for the light cones of spotlights and transparency effects for just about everything else. Added to that is the trauma of simulating shoals of fish and marine life in general – large quantities of independently moving objects.

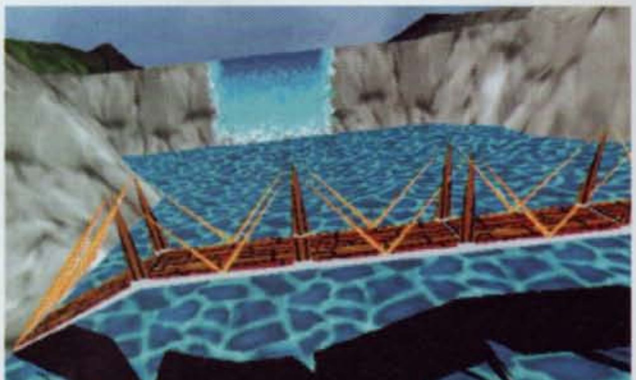
The third game Criterion Studios is offering could still go through some major changes before its release – while slated for the end of the year, it'll be a small miracle if Criterion gets *Aqua'Tak*

We started Criterion Studios to show people what you could do with *RenderWare*. Since we've started game development there's been tremendous developer feedback, all helping drive future technology advances

finished in time. Putting you in the seat of a futuristic, tooled-up power boat in a race-with-guns across rivers and lakes, *Aqua'Tak*'s power-up and racing structure will inevitably bring comparisons with *Wipeout*, but the recently enabled wave effects, with wakes behind boats that'll cause your boat to list and lurch, suggest that Nintendo's imminent *Wave Race 64* is a better example for comparison.

Criterion Studios is an organisation to watch. Canon hasn't just gone through the motions of setting up an interactive division, but instead designed groundbreaking technology first, and then staffed a development arm with die-hard game addicts. A philosophy which **Edge** strongly endorses.

Scorched Planet, *Sub Culture* and *Aqua'Tak* are all scheduled for release before Christmas 1996 and will be published by Virgin Interactive.



The water in *Scorched Planet* all has a realistic undulating texture. The bridge's realtime shadows are reasonably impressive, too

The burning questions

Edge asked David Lau-Kee to reveal a few more facts about *RenderWare*, 3D accelerators and Intel's MMX plans...

Edge How does your library compare to other 3D systems, such as Argonaut's *BRender*?

DLK We've heard from our customer base that the performance, robustness and reliability of it is better. We come from a software engineering background so that helps us in our thirdparty support.

Edge Which key developers are currently using *RenderWare* technology?

DLK Zombie, Viacom New Media, Davison and Associates... it's in CAD and Web site design that we've had the most impact. With game developers, there's this big attitude of 'let's build it ourselves'. But as a game developer, added value should be on the creative side. We believe that in the future 3D graphics libraries will end up like sound libraries. Something you just buy in.

Edge Why will your libraries be better than in-house ones?

DLK We've got groups of people internally, whose entire life is orchestrated around building the best tools. If your development house is big enough to support that kind of team, then terrific. If you don't then out-source. We've found that it's rare to get a company where you've got both sides of it – the technology and the gameplay designers.

Edge Intel are listed as one of your licensees – does this mean you're having an influence on MMX development?

DLK We're fairly close to it. When there were only 12 prototype systems in Europe we had two of them. Intel has flown our software engineers out to Israel, where the compiler technology is being developed and we've been following it closely.

Edge Do you feel MMX is going to kill off the emerging 3D accelerator card market?

DLK No, because MMX is more an extension to the basic CPU that allows you to perform certain digital signal processes (DSPs) very efficiently. MMX is now more of a staging point before the next generation of 3D cards comes along. The real challenge to the board manufacturers will come in the tail-end of 1998 – where a lot of the functionality of the 3D card goes to the motherboard.

Edge So which cards are worth looking at?

DLK The generation of boards which is just beginning to come out, like the 3Dfx, the Matrox Mystique, the Rendition Vérité. All these offer added value. Right now those three are good buys.

Edge Is Criterion backing any specific manufacturer?

DLK We're working with Matrox at the moment. *Scorched Planet* may well be bundled with some of the Matrox stuff, but we don't generally go out looking for bundling deals. We get all the boards, try and build relationships with all the manufacturers.

Edge And what about the floundering nVidia card which Sega backed?

DLK It's great to be at the leading edge every now and then – however long it lasts.



Total recall:

the future of data storage

Without RAM, hard disks and CD-ROMs, the videogames of today would not exist. **Edge** documents the history of data storage, finds out why console manufacturers are cheating gamesplayers, and predicts future developments

When the ZX80 was launched by Clive Sinclair in 1979, the promotional material surrounding it suggested it was so powerful it could run a nuclear power station. It contained just 1K of RAM and used standard audio-cassette tape for auxiliary storage. Apple's Pippin, recently launched in Japan, will have 6Mb RAM and utilise now commonplace CD-ROMs containing up to 650Mb a disc for auxiliary storage. The Nintendo 64, meanwhile, is capable of shunting over 500Mb of data around its system per second and will have a read/writable magneto-optical drive, while in the PC market, gigabyte hard drives are fast becoming the norm.

However, none of these orders of magnitude improvements have yet managed to narrow the input/output (I/O) gap, a discrepancy resulting from storage technology improving at a slower rate than that of microprocessors. The computer industry is essentially engaged in a race between two axioms: Moore's Law and Parkinson's Law of Data Storage.

In the early 1960s, **Gordon Moore** first noticed a trend that still holds: the amount of information storable on a given amount of silicon has roughly doubled every year since the technology was invented. **Parkinson**'s Law, meanwhile, states that 'Data expands to fill the space available for storage'. Fortunately, the latter tends to double every 18 months, the former every 12. That it will continue that way indefinitely, though, is highly unlikely.

In the games industry the problem is compounded by a volatile market demanding ever-increasing realism. The escalated use of 3D graphics has made bandwidth a real issue along with RAM size and the capacity of auxiliary storage. The difficulty comes in designing future platforms and, while the PC's architecture is largely (though messily) upgradeable, dedicated hardware manufacturers are really struggling.



The Saturn's memory expansion slot enables future games to utilise extra ROM. So far, SNK is the only company to take advantage of this

Sega has already upgraded the Saturn's memory capability for specific games with a ROM expansion cartridge that plugs into the slot on top of the console. Nintendo, meanwhile, would probably like to have delayed news of the DD64 magneto-optical drive and certainly news of its RAM expansion packs as long as possible.

The increased use of 3D graphics has made bandwidth a real issue in game development, along with RAM size and storage

'This is probably the biggest problem for a hardware manufacturer, as programmers are impossible to please,' reckons Shiny Entertainment's **Dave Perry**. 'So they make a stab in the dark hoping that they supply just enough RAM to get the job done – this keeps the price as low as possible. The problem is that RAM upgrades offered down the road rarely work. We cannot rely on everyone buying them unless they are fitted as standard from the beginning. There are exceptions to this



This graph shows the hypothetical effects of dissimilar doubling rates over a decade. Clearly, advances in processor speeds exceed all others

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rule, like the 16K RAM Pack for the ZX81, the release of the 48K Spectrum, and the slow move from 512K to 1Mb on the Amiga 500. But, basically, to really succeed a RAM expansion requires 'must-have' killer games that make everyone buy the RAM to play the game. That's why it's safer just to put the RAM in from scratch.'

But RAM costs (DRAM is currently around US$30/Mb) and the price is notoriously volatile and almost impossible to predict given the lengthy time for hardware development. Manufacturers have to try and anticipate the silicon market, riding a fine line between price and capability. And the amount of RAM can be the difference between a machine entering the market at an attractive price point or not.

Toby Ferrand is in charge of M2's development in the US and has definite, though perhaps slightly biased, opinions on the subject. 'RAM size is of growing importance because users' expectations for quality, interactivity and gameplay complexity are increasing rapidly. The Sony PlayStation has 3.5Mb of memory and the Sega Saturn has 4.5Mb. For these machines, the limited amount of memory is definitely a key constraint for title development. Since these machines aren't true 3D machines - they lack z-buffering, MIP-Mapping and hardware Gouraud shading - their memory is really sized to provide for adequate 2D performance. While Matsushita has not stated publicly how much memory is in M2, suffice it to say that it will be adequate for both 2D and 3D games.'

Expect that to be 4Mb, an important figure when considering ports from the PC. Developers aiming for the PC market can pretty much assume the machine will have 4Mb RAM, and probably now 8Mb, mainly because Microsoft has those requirements for *Windows* and *Windows 95*. Developers - who en masse are capable of exerting tremendous influence on a platform's ultimate specification - always push for as much RAM and VRAM as they can get ('A gas will always expand to fill a room. Programs will always expand to fill the RAM,' comments Perry).

While the statistics may point to a vast increase in RAM over the past 15 years, Bullfrog's **Peter Molyneux** argues that in real terms levels have remained almost static. 'As a games developer the actual amount of RAM available hasn't really changed that much since the early days of the NES or Master System, since so much more memory is needed for graphics and sound effects which seem to just gobble it up. So, at first, when you hear about a new console, you think, "Oh wow, how amazing," but once you take away all the memory you're going to need for those great graphics and fabulous sound effects, the net gain in memory is relatively small.'

> To really succeed a RAM expansion requires 'must-have' killer games that make everyone buy the RAM to play the game

Molyneux illustrates this by pointing out that in *Populous* a character took up 48 bytes while the characters in *Dungeon Keeper* require 2K. To keep up with these increasing demands for memory, the trick from the hardware side is to keep as much of the architecture as scalable as possible, allowing commitment to a final spec very late in the day, as was the case with both the PlayStation and the Saturn. According to some, though, Nintendo's volte-face with the DD64 is an illustration of how badly it can all go wrong. One industry source, who wishes to remain anonymous, said: 'The drive is



Matsushita's M2 has a unified memory system. Once one operation has been finished, the memory used by that can be freed for later use

mainly necessary because Nintendo was let down by technology. It gambled in the design stages that the slow, high-density ROM needed for carts would be cheap enough by the time it launched. For various reasons the market didn't go as well as it expected.'

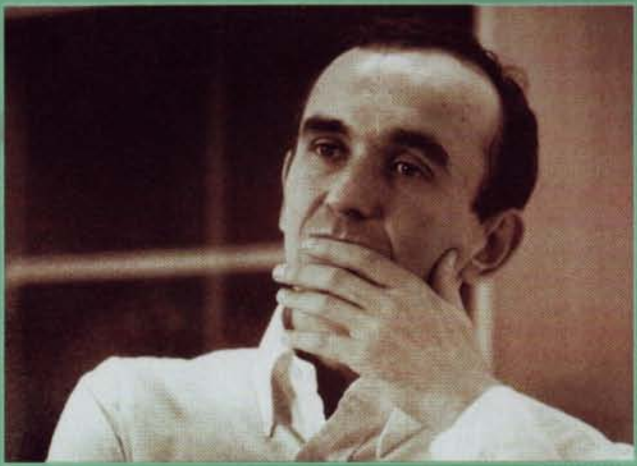
Nintendo underestimated the switch to CD-ROM within the development community, and thus, the need for more storage

Nintendo's DD64 drive unit is currently at the hub of speculation and rumours that it won't be a standard magneto-optical drive, but rather some obscure hybrid of read-only and magnetic-writable media. Certainly, Nintendo underestimated the switch to CD-ROM within the development community and thus the need for more storage, but - apart from in its case - storage isn't really an issue any more.

Both capacity and access time have increased drastically since the days of magnetic tape, handicapped as it was by having to search for data blocks sequentially. In the PC market the steady diffusion of floating-head magnetic disk drives (often referred to by their informal generic name, Winchester) in which the read-write head planes over the disk surface on an air cushion, has taken access time down to 28 milliseconds and vastly bumped up domestic capacity. For games specifically, both 1.4Mb diskettes and ROM carts have found themselves being superseded by CD-ROM, which easily accommodates most data requirements at present. It's a trend set to continue with the imminent onset of DVD and its 4.7Gb capacity looming on the horizon. Naturally, there is a potential fly in the ointment, however.

DVD's passage from concept to standard hasn't been a particularly smooth one and the latest twist involves the Hollywood faction's insistence on regional coding. Hollywood can, at present, regulate the release of films on video in different territories indirectly via the NTSC/PAL standards, and its current push is to extend that control with the creation of eight distinct territories for DVD. While initially this might seem to only affect the DVD video market, the same discs are designed to play on DVD-ROM with MPEG2 decoding, meaning a knock-on effect is inevitable.

While massmarket DVD is some distance away yet, and read/writable DVD even further in the future, MO drives have recently begun dropping drastically in price and are rapidly approaching hard disk performance. A plastic or glass disc is coated with a compound (often TbFeCo - a combination of terbium, iron and cobalt) and is written by using a high-



According to Peter Molyneux, modern games use RAM for graphics and sound, so gameplay still has to be squeezed into a small memory area



Digital Video Disc, while still seeking a final standard specification, offers a 4.7 gigabyte storage capacity on each disc. More FMV, then?

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History of RAM

Though the giant ENIAC built at the University of Pennsylvania, using 18,000 vacuum tubes and covering 1,800 square feet of floor space, is widely considered to be the first modern computer, it wasn't until the theories of Hungarian mathematician **John Von Neumann** were implemented that computers became recognisable in a modern context. The Von Neumann architecture proposed that programs and data should be stored in a slow access storage medium and worked on in a fast access, volatile medium. Thus, the concept of RAM was born.

The first computer based on this architecture was EDVAC (Electronic Discrete Variable Automatic Computer) and, unlike ENIAC, returned to the system of binary notation that the pre-electronic computers had used. This enabled them to use mercury delay lines, a memory system based on simple on/off switches. An electronic pulse was 'trapped' in a tube of mercury and could therefore be retrieved at will. Typically, a sensed pulse yielded a '0' and no pulse '1'.

The second generation computers moved on to using ferrite core memory, a system using magnetic loop toroids first proposed by **Jay Forrester** in 1950. A 3D array of toroids was constructed with each row and column having a common wire running through its centre. When data from a certain address was required, at the intersection of horizontal and vertical wires current would pass a threshold level and remenance (the residual magnetic flux) would be switched. This would be detected via a characteristic signal in a sense line and, depending on the polarity of the original magnetic field, a '0' or a '1' detected. However, even though it was non-volatile and the toroids would stay magnetised until read, it had the disadvantage of being a destructive readout and the memory cell had to be rewritten after every sensing.

Core memory was still being used in the early seventies but the advent of CMOS' semiconductor technology made it rapidly obsolete. The first commercially available dynamic random access memory (DRAM) chip, the Intel 1103, was introduced and DRAM's dominance was rapidly established.

Coupling low production cost, a small memory cell and low power consumption, DRAM still has a commanding share of the current RAM market. Consisting of a single transistor and a capacitor, a bit is stored in the capacitor as a charge (typically five volts for '1' and zero volts for '0') which can be read when capacitor discharge is triggered by accessing the transistor at the memory address. Again this is a destructive process and the data has to be rewritten, but DRAM is additionally handicapped by leakage from the capacitor. Therefore all rows have to be periodically read, sensed and rewritten with most DRAMs since 1970 refreshing a single row every 15.625 microseconds.

With density quadrupling every three year generation, the structure of the memory cell itself has remained unchanged. There are many different varieties, though, which have modified the way RAM chips interface with the main system. EDO-RAM, effective in systems such as the Pentium, leads to a 20% performance increase; and Video RAM, with an additional long shift register, allows parallel operation with the normal interface and therefore simultaneous reading/writing.

Static RAM (SRAM), which overcomes the capacitor leakage problem by using cross-coupled inverters, is still volatile, but has the advantage that the lack of a refresh cycle leads to greatly increased performance due to the overall decrease in cycle time. The necessity for more components leads to a higher cost and a quadrupled size of cell, both of which have limited SRAM usage to small areas where their speed is vital, such as on-chip caches. ∈

intensity laser to heat up the compound to its Curie point, allowing its magnetic polarity to be altered and 'frozen' as it cools. Reading is done by a low-intensity laser (originally infrared, now moving to shorter wavelengths allowing greater data density) with the polarisation of the reflected light depending on the original polarity of the data bit. Laboratory projections estimate that densities of 45 gigabits per square inch are theoretically possible. Oddly enough, though, their greatest asset, writability – which is expected to be used extensively by Nintendo – might turn out to be its biggest drawback.

'They certainly look good, although I suspect that the console boys will stay away from writable drives due to the piracy problem, etc.' says **Chris Hinsley** of Taos (see E9) and *Pyjamarama* fame.

While Hinsley's comments concerning MO drives are terse, his views on bandwidth are voluble. 'Memory bandwidth is the only real problem in the games consoles today. After you have a good RISC CPU and some fancy graphics-drawing chips the real problem is how fast can you shift memory around. Solutions are better caches, faster RAM, paged RAM, new RAM technologies – banked split access



The Nintendo 64, shifting over 500Mb of data per second, doesn't segment RAM, meaning memory restrictions are less of a problem

RAMs and so forth. Most game's programmers will just live with what they're given and find the best way to take advantage of each console's memory system. Personally, I think a unified large-cache RAMBUS-style approach is the best. All this mucking about with separate areas of memory for the sprite screen, background screen, textures, game code, etc, is just a pain in the arse.'

> All this mucking about with separate areas of memory for the sprite screen, background screen, textures, game code, etc, is just a pain in the arse

In designing the hardware architecture, there are two basic routes that can be followed in an attempt to solve the bandwidth problem. The first, and most popular amongst the current crop of consoles, is to dedicate multiple slow memories to specific tasks. This is not only easy to design but also can be implemented with older, proven RAM technologies. As Hinsley points out though, it can have disadvantages.

Toby Ferrand: 'There are several disadvantages. First, a distributed memory architecture is not very flexible. If a half-megabyte of memory is dedicated to audio, for example, and if a title doesn't actually need that much memory for audio, then effectively the machine has less useful memory than the specifications would imply. A second problem is that as DRAM densities increase, the distributed memory architecture can't take advantage of the latest, cheapest memory.

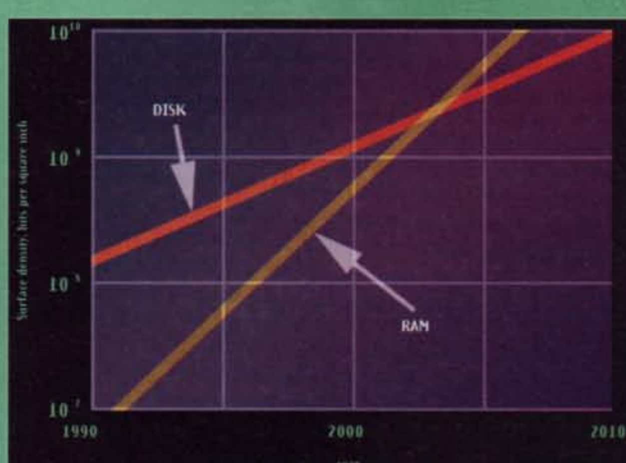
'Today the cheapest memory comes in 16Mb chips. If you have a half-megabyte of memory dedicated to audio, that memory must always be implemented with the less dense, more expensive memory. Finally, there are occasions where one process or another, 3D graphics for example, could benefit from the maximum possible memory bandwidth. If the aggregate memory bandwidth of a system like the PlayStation is, say, 100Mb/sec, but a substantial portion of that bandwidth is dedicated to audio and another portion to the CPU, then at any one time the graphics-rendering engine might be limited to no more than a few tens of megabytes per second. This inherently becomes the bottleneck for the system.'

The current trend now, with both the M2 and N64, is back towards a unified memory system. M2's unified memory uses 16Mbit SDRAM chips which, according to Ferrand, gives the machine an aggregate bandwidth of over 500Mb/sec, meaning that if the software running suddenly needs memory for a certain subroutine it should be there. Conversely, memory doesn't have to be left idle.

'If a title needs 2Mb for audio, it can have it, or if none is needed then the memory is completely freed up for other tasks at the discretion of the title programmer,' says Ferrand. 'When MPEG is being decompressed in M2, then a few hundred kilobytes of memory are allocated. When the MPEG sequence finishes, the memory is freed up and can be used for textures or anything else the programmer wants. Such an architecture enables the use of the cheapest memory, provides the best memory bandwidth, and is the most flexible for the developer to use.'

Molyneux also argues the case for unified memory: 'Potentially we don't have to worry about different areas of memory running at different speeds and theoretically if we needed more memory for sound than graphics we could do it. As developers it means we are less constrained by the architecture.'

Chris Hinsley: 'Separate areas are just a bloody pain. You can have more



A comparison of RAM technology and disk technology. By the year 2003, RAM will be a more efficient method of storage than hard disks

Continued next page

Continued

textures, double-buffered screen building and loads more besides if you have a single main RAM area, and the custom graphics chips can access all of it, both for screen, drawing and data storage functions. Just have a single area of general-purpose RAM and stick a sodding great cache on all the chips that read from it - lovely.'

If forthcoming machines are going to rectify the problem in the console market, for the PC it's a different matter. Video bandwidth has been a huge drawback and while video cards eased the problem somewhat, the arrival of 3D-accelerated consoles has resurrected it again for anyone designing cross-platform software.

Peter Molyneux: 'The bandwidth constraints presented by the PC are both good and bad. As PC architecture has evolved over the past 15 years it is very, very familiar, but chips manufactured for the base architecture must be conservative - hardware and graphics accelerators all have different ways of optimising access and so must be dealt with by us. *Win95* has tried to establish an interface standard with *DirectPlay*, *DirectDraw*, etc., but it's a Herculean task and will take time to perfect.'

Dave Perry is less understanding: 'The PC is really messy inside. Hopefully when Microsoft controls the planet it will release a new PC with a new, 'clean' architecture. This will dramatically drop the price of all of the fixes that companies are having to create to keep moving forward.'

The PC is really messy inside. Hopefully when Microsoft take over the planet it will release a new PC with a new, 'clean' architecture

Until then, though, fixes will be what is required, and the latest of them to excite interest is NEC and VideoLogic's PowerVR chipset. Targeted from the beginning at reducing both memory requirement and memory bandwidth requirement, it dispenses with conventional z-buffering and handles hidden surface removal through its own Image Synthesis Processor (ISP). It also contains an integral texture and shading processor that only deals with visible pixels, reducing memory traffic, so VideoLogic claims, by between three and ten times.

The drawbacks are that it relies on the host CPU as a geometry transformation engine (GTE) and it will thus only realistically achieve improved performance on a P150 upwards. Also, the ISP chips are expensive.

Chris Hinsley, in particular, is sceptical: 'I don't believe that boards like the VideoLogic or others really help, other than to allow acceleration of drawing polygons. Providing, that is, you have enough texture RAM on the graphics card. Again I don't like this approach of having a separate area of memory for the textures and so on. I believe Apple has got it right with its QuickDraw 3D Accelerator Card. It can have the screen and textures in main PCI memory and can freely draw from and to any address region, and about bloody time.'

According to a NASA research document on storage technology in the 21st century, there are three important trends to consider in the future development of the field. The first is the negative effect the I/O gap has had on computer evolution. Another is that magnetic storage has, despite predictions to the contrary, been able to keep pace with optical storage. The third is that solid-state storage media are approaching the density and even the cost of the magnetic ones.

It's highly likely that the future of storage lies in RAM, with a price and

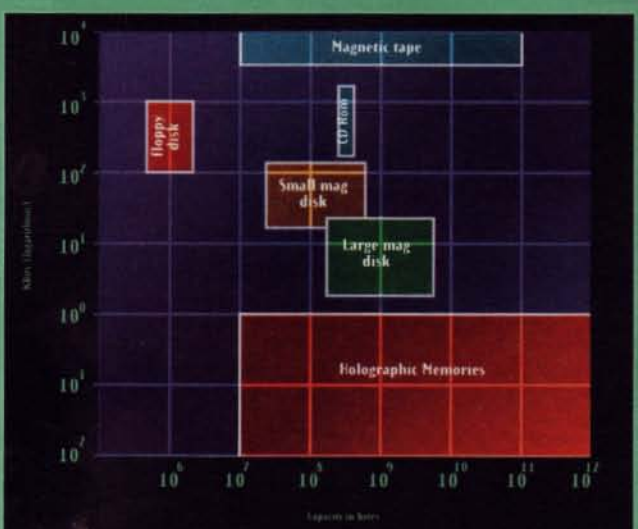


VideoLogic's PowerVR 3D accelerator card dispenses with conventional z-buffering and handles hidden-surface removal itself

capacity similar to current hard discs, though with the advantage of a much faster access time. Current projections estimate that 1Gb RAM chips will be a reality by the start of the next century, but the immediate future, however – and this is assuming the computer landscape doesn't change irrevocably over the next two or three years – is likely to be one of incremental improvements to both the standard PC specification and the next couple of generations of consoles.

DVD, despite its current difficulties, is a certainty. 'DVD will be the next big step,' says Perry. 'Mass storage on a CD-ROM which is already "user friendly" and accepted cannot fail.' Elsewhere, simply extrapolating from current trends leads to the conclusion that more RAM, improved 3D graphics cards for the PC will soon become the norm. Peter Molyneux points out that, at current rates, by the year 2000 the base-spec RAM for the PC will be 32Mb, and Hinsley predicts an industry-wide move to a single RAM area. Meanwhile, RAMBUSes, as implemented in the N64, which interface RAM directly to the CPU and eliminate the need for caches, show much promise.

While the I/O gap is expected to shrink rapidly, the technology is developing fast. Indeed, in the area of memory that development is probably accelerating, the unfortunate corollary is that redundancy is, too. 'Faster, more bits, all that good stuff...' Perry forecasts, 'more excuses to feel bad about your purchase six months later.'



A comparison of secondary storage technologies. Note how holographic memory can store the most data and is also the quickest to access

Future developments

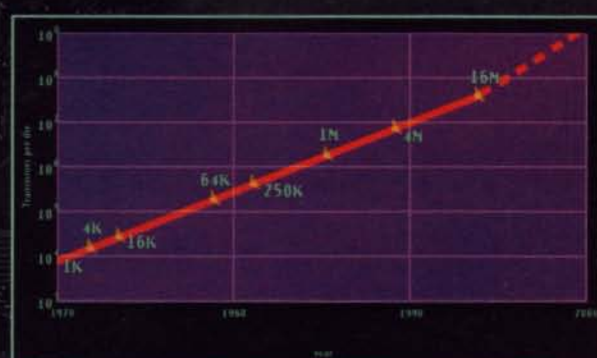
The future of memory storage beyond the next ten years is a cloudy one. While the proposed introduction of hard discs utilising giant magneto-restistance by the end of the century might take data density from the current maximum of 75Mb/square centimetre to 1.5Gb/square centimetre, current predictions hold that solid state memory technology will eventually start to take over from the more traditional moving media.

RAM storage density averages a 60% improvement each year and while that parallels the growth in density of CPUs, the speed has lagged way behind. The fastest RAM chips, SRAM, have only improved at 40% per year while the more widespread DRAM chips have improved at an even slower rate. Main memory performance, in fact, has only been able to keep in sight of CPU development due to the use of SRAM cache memory operating as a temporary high-speed buffer in front of a larger but slower DRAM array.

However, RAM is still much faster than any current moving media and the development of silicon carbide semiconductors might speed it up further. Able to tolerate higher temperatures than current DRAM and therefore operate at higher clock speeds, individual cells can also be made three times smaller, and current leakage 10,000 times less. Other techniques also under investigation include magneto-resistive RAM and ferro-electric RAM, where the conventional DRAM capacitor is replaced with a 'leakproof' one, thus eliminating the need for a refresh cycle.

Away from RAM there is a bewildering array of different technologies being developed as future storage media ranging from molecular biological devices (where the switching speeds for molecular gates are in the region of three picoseconds) and spectral hole burning (which produces tell-tale features in the fluorescence spectra of a storage media) to the use of scanning, tunnelling microscopes to pit a conducting media with pit spacing being measured on the atomic scale and therefore providing an extremely high storage density.

Holographic memory, though, where information is stored by recording wave interference patterns, is the technology with probably the most immediate potential. Two separately focused laser beams are intersected within a storage media with the first beam containing the image. The second beam produces an interference pattern which is recorded by the media and shining this reference beam alone retrieves the data from that location. It's advantages are speed, potential high density and the facility for both parallel search and retrieval.



By the year 2000 the density of dynamic RAM (DRAM) should be around the 1Gb mark. Which can only be good news for gamers

Z

Over four years in development, the legendary Bitmap Brothers' strategy game, *Z*, has become part of videogaming folklore. But can the boys who cut their teeth on 16bit Amiga classics such as *Xenon* and *Speedball* deliver the goods on the PC? Edge enters the congested battlefield





Z contains many innovative new ideas but still cannot compete with *C&C*. The cutscenes (above) are amusing, though, and are well designed (see E31)

Just about every game suffers some release date delays but few can boast a record comparable to *Z*s. For the past four ECTSes *Z* has been a regular attendee and even when PC brothers in arms like *Inferno* and *Grand Prix 2* have deserted it by finally making it onto the shelf, *Z* has remained a reliable development anecdote.

So it's come to pass after four years, *Z* is complete. Unfortunately it has suffered with the passage of time and, compared to some of the extravaganzas that have emerged both on the PC and consoles since, it looks positively prehistoric. Alongside even other 2D wargames (which don't exactly have a reputation for pushing the boundaries of gameplay forward) *Z* initially seems to take a step back.

This is in some ways inaccurate, though. The Bitmaps made a calculated decision years ago to produce a pure action wargame and dispense with the resource-management component that is now ubiquitous in PC strategy wargames. Instead, *Z* is time-based – all actions take a set number of real seconds to complete and the game revolves around this. The approach has led to a very distinct game but one that ultimately does not have the depth or longevity of its *Command & Conquer* or *Warcraft II* rivals.

*Z*s 20 singleplayer levels are all subdivided into various territories that may be captured by turning a central flag your colour. Occupying areas has the dual effect of bringing the military installations within them under your control and speeds up production of your units across the board. The more of the map you control the faster your sci-fi tanks, robots and guns pop out of the factories. The factories produce units regardless of which player is controlling them and this leads to the novel tactic of launching precisely timed raids to take a territory you know you have no hope of holding in the longer term just to capture the unit that is about to emerge.

On the whole, however, the timing approach leads to a slower game. Units seem to take an age to cross the map so responding quickly to attacks is virtually impossible. Also strange is *Z*s failure to use hidden units. By constantly showing the entire screen the tense element of fogging is removed. There seem to be no positive benefits to be gained from this but many negative ones. The experience is diminished but it does enhance other aspects of the game. By viewing the entire map from the start, longer-term strategies can be determined and implemented, and enemy movements tracked. However, the feeling that you haven't earned this free 'eye in the sky' is a little unsettling at times.



Each factory can manufacture certain vehicles depending on its construction rating

Format:	PC CD-ROM
Publisher:	Warner Interactive
Developer:	The Bitmap Brothers
Price:	£45
Release:	August 30th







The attention to detail throughout *Z* is remarkable. Vehicles leave tracks, the music speeds up when victory is near and the falling debris from explosions causes secondary impacts

*Z*s greatest asset is its artificial intelligence. It was one of the major reasons for the release delays but in this case it was well worth it. The computer rivals the best non-human opponents strategy games have ever seen and this is the root of the enjoyment *Z* offers. From the very first mission you're up against it, but the fight never seems unfair in the same way as it does occasionally in *Command & Conquer*. A fair and intelligent opponent is crucial to a game of this kind and you'll find one of the best right here. The AI is sadly let down by the basic premises of the game, however. By linking unit production so closely to the amount of territory a player possesses it becomes almost impossible to recover from a series of defeats. In the best of these games it's entirely feasible to fall back to a completely defensive position and still recover and win. *Z* offers no such redemption. The entire game hangs on a knife edge and frequently losing one flag results in the certain capitulation of all your forces. Being continually over-defensive minimises this risk greatly but it shouldn't be necessary to have to play this way to win on the harder, later levels.

Z's greatest asset is its artificial intelligence. It was one of the major reasons for the release delays but in the end it was well worth it

Z could be applauded for ditching the resource management side of its character but it just doesn't lead to as lasting an experience. *Warcraft II* is the supreme example of what adding just three simple commodities (gold, lumber and oil) can do for gameplay. Building your empire on hard work is simply more satisfying than being given it. This added strategy element does slow the game down slightly at first and is a matter for personal taste, but the rewards generally outweigh the drawbacks.

Z is a straightforward game that will appeal to many but it's let down slightly by its lack of depth. Given that the maps (and this stands true despite their consistently excellent design) are essentially very similar it does seem to require something else to hold the interest. It's hugely enjoyable for what it is but could have been so much more. As *Quake* is discovering, prolonged anticipation is all too hard to live up to, but in light of *Mario 64*, it is clearly possible.

Although *Z* is well-designed and enjoyable, its general failing is that it is still very much rooted in the Bitmaps' golden Amiga age. The graphical style, the objectives, the whole feel of the game is reminiscent of the 16bit days. While this is not a handicap in itself, the competition that has arrived from the US in the meantime has shown that 2D strategy games have evolved faster than the Bitmaps gambled for.

Edge *rating:*

***Eight** out of ten*





A red tank force advances on a blue enemy (left). Troops fighting over control of a flag (above)

NiGHTS into Dreams

With Mario fever taking over the game playing world, Sega has once again employed the services of the Sonic developers to produce a title equal to Nintendo's masterpiece. But is it sufficient to awaken Sega from its 64bit nightmare?







Gillwing is one of the earlier bosses and is fairly easily disposed of via about six or seven punches to the nose (left). Some scenery is highly reminiscent of *Sonic* (right)





Puffy is another boss (top). NiGHTS must pick her up and throw her through a series of walls

Format:	Saturn
Publisher:	Sega
Developer:	Sonic Team
Price:	£40
Release:	Out now (Japan)

Sonic the Hedgehog sold the Mega Drive to a whole generation of gamers. However lucky Sega was to break into a freshly dormant European videogames market, its mascot character helped lodge the company in the public consciousness and personified the blue half of the battle against Nintendo.

Sonic Twosday is now but a memory, though. With the Saturn, Sega has been fighting the new enemy, Sony, and up until now the battle has been notable by the absence of mascots. *NiGHTS* may be an attempt to bolster the public perception of its new(ish) machine, and provide a firm selling handle for the console in its continuing struggle against the PlayStation. Additionally (in Europe at least), Sega has nine months before Nintendo re-enters the fray. An older, established user-base was the advantage Sega held in the days of *Sonic*, and it's what it really has got to aim for now.



***NiGHTS* features numerous secret levels – here you can enter one through the stone door**

But is *NiGHTS* a good enough game to accomplish all that Sega hopes to achieve with it? The answer is, unsurprisingly, not a simple one. There can be no doubt that the game is easily the most original and (with the possible exception of *VF2* and *Sega Rally*) visually dazzling title seen on the Saturn to date. Set in a selection of 'dream worlds' the player can either walk ground-based characters around with complete freedom or fly with impressive speed over four set routes per level. The combination of low-clipping 3D terrain (all impressively texture mapped), speed (unrivalled in a platform game on any of the next generation consoles) and some almost drug-induced moments, has the heads of even the most cynical turning to have a look.

The story behind the game is intrinsic to the structure of the title. Two children, Elliot Edwards and Claris Sinclair are having nightmares. In their dreams they get transported to worlds, partly created by them, to have their wisdom, hope, intelligence, and purity stolen by the head of the evil world, Wizeman. With the help of NiGHTS (one of Wizeman's rebellious evil spirits) they must get these four attributes back, travel through the dream worlds and finally defeat Wizeman.

The basic idea of play is to collect the blue Ideya balls scattered throughout the level and return them to Ideya collection points. This is mainly achieved by

using the NiGHTS character to fly around the four set routes on each level. Freedom of movement is restricted to two dimensions when flying – NiGHTS can backtrack and fly up and down within the route, but he can't fly 'into' the level (although the game is displayed in such a way as to fool casual observers into believing this is possible). If his time runs out, NiGHTS will fall to earth and resume the identity of one of the children (the one that the player opted to play at the beginning of the game). On the ground, the children have complete freedom of movement but are vulnerable to attack by a floating alarm clock, something which ends the game.

Although *NiGHTS* has superficially simple 'collecting things' gameplay, in reality it's more complicated. Each child has only four dream worlds to complete, with a boss at the end and Wizeman as the finale to the fourth. At the end of each stage, the player is given a grade from A to F, a score dependant upon a number of factors including the time taken to complete the level, the number of extra Ideya balls collected and, most importantly, 'links'. A link occurs when NiGHTS flies over or loops around a consecutive series of game objects. These include floating rings, stars and Ideya balls. Completing levels with an average mark below C (including the grade for defeating the boss) will not allow the next level to be played immediately – the player can access it but must restart the game from that point to play.

It does not take long to get access to all areas in what in all honesty must be called a fairly small game.

NiGHTS can backtrack and fly up and down within the route, but he can't fly 'into' the level

However, **Edge** has had difficulty in consistently earning scores above C, suggesting strong replay value. The game also bears repetition because the player rarely feels that he has conquered any particular part of it – partly because the levels move so fast and partly because of the number of sub-levels and secret areas. *NiGHTS* also boasts an A-life system that is supposed to evolve the levels in subtle ways, although **Edge** has seen little sign of this. Strong Internet rumours persist that the game has a twoplayer split-screen option hidden towards the end although again no proof has been seen.

Sega's analogue pad makes a debut with *NiGHTS* and, although the game doesn't really need analogue control, the pad is an excellent addition to the Saturn's range of peripherals. Although not as striking as the N64's, the design is reasonably comfortable and easy to use. It is also compatible with existing software, adding a new dimension to games such as *Sega Rally*.

NiGHTS is a disappointment in some respects, however. The two children, whose complete freedom of ground movement was so vaunted by Sega, appear to take little real part in the game (if NiGHTS runs out of time and falls to earth as one of the children, the grade for that stage is automatically given as F), making comparisons with *Mario 64*, in effect, rather spurious. Similarly, although the seven levels (the children share the same fourth level) are well designed and graphically unrivalled, it does seem a rather low number to include on a system supposedly unencumbered by storage space problems (*Mario 64* boasts 15 levels with a vast amount of extras).

Sonic was a very focused game with a clear aim, making it easy to pick up and play. By contrast, a lot of the time *NiGHTS* feels as if its gameplay has been made to fit within a set of technological displays of competence, with good 3D, excellent texture mapping, total freedom of movement for characters, fast polygon movement – selling points for the Saturn around which a game has been fitted. *NiGHTS* is an enigmatic game that the public might take to their hearts or might reject out of hand. Either way, it's not quite enough to be an all-time classic.

Edge rating:

Eight out of ten



The perspective in which you view NiGHTS' flying can alter several times within a stage, causing confusion





Walking around as Elliot Edwards is fun for a while but ultimately pointless (top). NiGHTS enters a bob-sleigh-style sliding section, reminiscent of the star collecting stage in *Sonic 2* (above)





Only by memorising the course (and where long runs of rings and/or Ideya balls occur) can the player build up links of any significant length – needed to progress through the levels

Die Hard Trilogy

With Bruce Willis' and Jeremy Irons' voices being provided by an impersonator, and some less than state-of-the-art animation, Probe's Die Hard Trilogy at first looks rather ropey. But as in the movies, this title isn't going down without a fight







***Die Hard Trilogy* is just that – the game of the first movie is a roaming shoot 'em up progressing through the levels of Nakatomi Tower (left). *Die Harder* is a *V-Cop*-style shoot out in Dulles airport (middle). *Die Hard with a Vengeance* follows the movie's frantic car chase episodes (right)**





***Die Hard* doesn't particularly follow the movie's 'plot', but it's an enjoyable blast nevertheless**

Format:	PlayStation
Publisher:	Fox Interactive
Developer:	Probe
Price:	£40
Release:	September

Movie conversions have lost a certain amount of favour over the last few years – their place in the 'make an easy buck' department taken by that 32bit favourite, the coin-op conversion.

But this could all change. *Mission: Impossible* is due to make an appearance on the N64. *The City of Lost Children* may well prove to be next year's *Resident Evil*, and Probe has now completed *Die Hard Trilogy* – the company's second shot at bringing a top action film trilogy to the game player.

Like *Alien Trilogy*, *Die Hard* is an attempt to capture the atmosphere of the films while cashing in on hip videogame genres. Perhaps sensibly, the former title stuck with a first-person shoot 'em up style for all three chapters, but in *Die Hard* the designers have sought to emphasise the individuality of the three films by giving them a genre each. The question is, are the separate elements any good?

The first in the trilogy, *Die Hard*, is initially disappointing. Tenuously linked to the film's plot, McClaine has to progress upward through the terrorist-filled Nakatomi building, picking off the bad guys and disarming bombs along the way (a feature borrowed from the third movie, *Die Hard with a Vengeance*, it appears). Although the level is certainly action packed (the terrorists are numerous and willingly line up for the slaughter), the animation on McClaine (who is viewed from 45 degrees above and behind) is quite dreadful. He trots around, turning uncomfortably as he searches for hostages (when they are found, the voice actor screams 'Get the hell outta here!' in a less-than-believable Bruce Willis accent) and his jumping animation is quite laughable.

Nevertheless, the onslaught of baddies soon causes these minor, initial irritations to wane as you become more accustomed to controlling McClaine, finding new weapons and obliterating the enemy. Additional graphical comfort comes from the impressive transparent effect employed to enable McClaine to see hostages, etc in rooms adjacent to his current position,



The see-through effect of the first game is very impressive, and prevents camera restrictions

and the extravagant explosions that accompany the destruction of cars and bombs. However, alone, *Die Hard* is the least impressive of the three.

Die Harder, which takes the form of a *Virtua Cop*-style on-rails shoot 'em up, is better, although highly derivative. As with AM2's coin-op, the player has to guide cross-hair sights around the screen blasting baddies and picking up new weapons by shooting the relevant icons. The action is made slightly more interesting by the inclusion of innocent but idiotic civilians who run around getting in the way, but again this feature has appeared in every other *V-Cop* title.

Visually, *Die Harder* is so similar to *V-Cop* you'd think it was designed by the same team – the oversized sights, the arcade-style fonts, the chunky characters – it's all here. Yes, following the examples set by previous, successful games is pretty much the norm these days, but surely the on-rails shoot 'em up is in danger of burning up as a genre, unless it widens to embrace new ideas and new features.



Inside Dulles airport, the *Die Harder* game follows the guidelines laid down by Sega's *Virtua Cop*. This section can be perversely entertaining, especially when civilians are accidentally toasted (above right)





Probe seems to have mastered explosion effects in its PlayStation 3D engine – they really impress

Nevertheless, *Die Harder* is proficiently designed, exciting and fun. The airport setting, exploited so well in the film, is equally well employed here with each level of the game using a new location within the Dulles complex. The large airport foyer stage, for example, packs in loads of detail (vending machines, check-in desks with air stewards cowering behind them) and later the game broadens to take in the tunnels running beneath the airport. The graphics aren't as sharp and well-defined as *V-Cop*'s and the textures look a little ragged at times but, importantly, almost everything in the game can be destroyed – glass smashes, Coke machines explode, bullet holes riddle walls – giving a marvellous feeling of immersion.

Unlike *Die Harder*, *Die Hard 3* could not be described as derivative, combining elements of *Destruction Derby* and *Ridge Racer* in an interesting 'race against the clock' thriller. To begin with you must drive a yellow cab through various areas of New York, trying to prevent a series of bombs from going off (if you get to the bomb before it explodes you're given the location of the next and so on). A radar display at the top of the screen reveals the direction to travel – all the player has to do is get there.

Of course this isn't as easy as it sounds – there are pedestrians and other cars everywhere and the radar only shows the general direction of the bomb, disregarding the maze-like streets you have to navigate. Driving itself is a challenge – the car is incredibly difficult to control and it'll be a long time before you'll handle corners without killing passers by.

In some ways it's a shame this section didn't get a release by itself. The concept behind it is good and, to begin with, careering round the streets of Manhattan, crushing people, is a great laugh. However, the gameplay lacks variety, and although later levels do provide variations on the theme – chasing the car across New York's central park and through the subways – essentially it's all the same.

Like *Alien Trilogy* before it, *Die Hard* is an admirable attempt to turn a series of seminal films into one videogame. Here, though, the designers perhaps have stretched themselves too far. All of the sections have many positive attributes (which is more than can be said for most single game releases), yet it seems that they have all been compromised in order to share the CD with each other – a shame since Probe seems to have a keen eye for the movie conversion. Perhaps Fergus McGovern's team should attempt just the one film next time.

Edge rating:

***Seven** out of ten*





Once Manhattan has been cleared of bombs, enter Central Park for more chase mayhem







Driving through the busy streets of Manhattan in *Die Hard with a Vengeance* is a tormenting experience – expect to destroy most of the obstacles rather than avoid them

Decathlete

Going head to head with Konami's PlayStation powerhouse, *International Track & Field*, Sega has approached the arena with a more comical strategy in mind. Enter the Decathletes, cartoon athletes more concerned with hair styles than athletic style...









The high jump (above) is the only event that's really difficult to master. The in-game camera work shifts almost cinematically. This is the initial view for the shot put event (middle). A fast run-up is usually the key (right)

Sega's Model 2 and Model 3 arcade boards are expensive pieces of equipment. Mindful of the costly conversion process between arcade and home versions of games (and that many new arcade games do not fully exploit the Model 2 and 3 technology), Sega's ST-V system has therefore been seen as something of a boon to its not-insubstantial development capacity.

Games programmed specifically for the ST-V board can be almost simultaneously released as a home version, and *Decathlete* is the second product out of the starting blocks following the appearance of *Golden Axe: The Duel*.

Based on the ten events of the Olympic Decathlon, *Decathlete* is AM3's update of the traditional button-hammering frenzy of *Track & Field* games of old. Like Konami's recent PlayStation sport sim, *International Track & Field*, *Decathlete* opts for fully textured, motion-captured, polygon figures in a kind of virtual stadium. With the exception of *Sega Rally* and *Virtua Fighter 2*, it displays some of the most vibrant visuals yet seen on the Saturn - but from one of Sega's most respected development teams, no less is expected.

The game concentrates on immediate accessibility rather than factual accuracy. Gone are the multiple ranks of statistics and international athletes, replaced here by eight firmly tongue-in-cheek superstars. Whether it's the amazing afro of the British athlete, Jef Jansens, the ridiculous posing of the German star, Karl Vain, or the Afro-Caribbean victory dance of Femi Kadiena, any similarity to athletes living or dead is purely coincidental.

Nine of the ten events work superbly well (the 1500m is a little disappointing), with the athletes responding convincingly to the player's commands.



The game has an option to display a short demo detailing how each of the ten events is performed before the player attempts them, and it's a mark of the freshness of *Decathlete*'s arcade conversion that the controls depicted in these demos appear to those fitted to coin-op cabinets.

In fact, it's the faithfulness of *Decathlete*'s conversion that lets the game down. On looks and function of the ten events, *Decathlete* is hard to fault - it's probably the best track-and-field simulator on a 32bit console. For some, however, it may lack the depth to be a really successful consumer game. For instance, there's no option to play field events correctly (ie how they are actually organised in real competition) - the high jump event's 'three failures at one height equals disqualification' would not suit the high-speed environment of the arcade, for example, but would have been most welcome on a home version. Similarly, the game could have included support for more than two players and realistic computer drones used to make up the numbers in track events.

As it stands, *Decathlete* is an excellent arcade game but a slightly flawed console game. Superb graphics, animation, sound and event simulation make it hard to beat in playability terms and it's certainly a lot more fun than its admittedly worthy competition.

It makes no attempt to be a serious simulator or even pretend to be more than a piece of kickabout fun, but Sega has reflected these factors in giving it a £40 price point in Europe - which must surely make it the steal of the summer season for Saturn-owning sports fans.

Edge rating:

Eight out of ten





***Decathlete*'s high-resolution, 60fps graphics are only let down by the tawdry drones in the track events**

Format:	Saturn
Publisher:	Sega
Developer:	AM3
Price:	¥5800 (£40)
Release:	Out now (Japan)



Time Commando

Brushing aside traditional gallic concepts such as *Alone in the Dark*-alike adventures Adeline has opted for an arcade adventure beat 'em up for its 'filler' title before *LBA2* hits the shelves. It's a decision the French codeshop could live to regret







From the prehistoric era (left), through a Ninja-infested orient (middle), to the dark and macabre middle ages (right), *Time Commando* pits the player against a series of increasingly adept opponents. The commando's fighting moves, however, remain unsuitably slow, unnatural, and irritating

They say a change is as good as a rest, but Adeline really should have ignored them. Okay, so *Time Commando* was meant to be a quick filler – a fun action game intended to pass time before *LBA2*. However, it turned into a much bigger project, took a lot more time than planned, and now it's here, **Edge** has to wonder why Frederic Raynal and co put in so much extra effort.

The player controls Stanley, a mechanic responsible for looking after a computer so powerful its CPU is suspended in another dimension. Unfortunately, the computer malfunctions and somehow Stanley is sucked into a series of historical alternate realities. In short, *Time Commando* is an action adventure in which you have to travel through eight history zones (medieval Japan, the Wild West, Roman Italy, etc) killing people and collecting computer chips.

> Because of the tardiness of the character, and his dulled responses, you never really feel in control during scraps





Streaming the prerendered backgrounds off CD, *Time Commando*'s scenery is impressive stuff

The main problem with *Time Commando* is its agonisingly frustrating control method. Adeline has boasted about its new smooth animation, and Stanley's movements are indeed polished and reasonably realistic, but everything is grindingly slow – much, much too slow for an action game. Walking around the landscape (using the cursor keys à la *Alone in the Dark*) is bearable, but when you want to search an object or area for concealed chips, weapons, etc, the search function (activated by pressing space) has such a pointlessly long animation sequence you get to the point where you simply can't be bothered to seek out elusive secrets any more – you also run the danger of being clobbered by a passing baddie while you're stuck in this animation.

Fighting is equally frustrating. Because of the speed of the character, and his dulled responses, you never really feel in control during scraps – most fights are merely reduced to repeatedly slashing blindly at opponents – acceptable in an RPG that has a bit of fighting in it, but not acceptable in an action game whose central theme is fighting.

On the positive side, the game is reasonably compulsive due to the huge number of baddies, locations and weapons, and many of the backgrounds and enemies – especially animals – are beautifully drawn. Maybe if the focus had been switched from fighting to exploring, this could have been vintage Adeline, but the company's mission was of course to try something new.

A cautionary message for software companies, famous for one type of game, who want to attempt another: don't underestimate the task. **E**

Edge rating:

***Six** out of ten*



Format:	PC CD-ROM
Publisher:	EA
Developer:	Adeline
Price:	£35
Release:	August

F1

Many still see *Wipeout* as the best racing game on the PlayStation, but Psygnosis may have excelled itself with this authoritative and exciting Formula One simulation





***F1* copes easily with several cars on-screen at the same time without stepping down to 'chug' mode. Cars in the distance use less graphical detail, but the effect isn't obvious to the player**



The pitstop section is well laid out, but can be frustratingly slow to use

Format:	PlayStation
Publisher:	Psygnosis
Developer:	Bizarre Creations
Price:	??
Release:	??

Coming up with a successful, well-respected videogame is never easy of course, but Bizarre Creations undertook an especially difficult task with *F1*. First of all, that other Psygnosis racing game, *Wipeout*, is still one of the best PlayStation games available, so living up to it was always going to be tough. Secondly, many would argue that complex simulations belong on the PC, not on a console – and that there is no way a console title could compete anyway. Before seeing the game, therefore, **Edge** was concerned that a serious conceptual blunder had taken place. Fortunately, Bizarre knew exactly what they were doing.

F1 fulfils the demands of all comers. For those who want realism, all the drivers and constructors from the 1995 season are represented and although it's difficult to test Psygnosis' claims that *F1*'s designers have instilled each computer competitor with the characteristics of a real driver, there are definitely differences in the way opponents compete. When players try to overtake, for example, some drivers will swerve dangerously in front, determined not to let anything pass, some will stick to a safe route, while others will move in to accommodate. In effect, every time you overtake it's difficult to predict what will happen – far more satisfying than whizzing past several drivers all following the same path.

Importantly, *F1*'s realism extends to car handling. Selecting the Grand Prix rather than Arcade option means accepting all the 'real world physics' of F1 racing. In this mode, merely touching the rough ground skirting each track can cause the player's car to spin totally out of control. And there are no quick recoveries: just as in the real F1, when a driver misjudges a bend and ends up on the grass verge, his race is very probably over. Because the way each vehicle behaves seems believable, however, this never becomes frustrating – if the player keeps spinning off the track, the fault is with their driving and not the game's designers.

The arcade option does away with the punishing realities of high-speed racing and gives the player pretty much what the title suggests: an arcade-style racing game. You can glide happily over grass verges, zip in between other vehicles, collide happily with barriers and keep on racing. It's great fun and a marvellous way of getting to grips with racing before attempting the 'proper' Grand Prix mode.

Most impressive, though, is the fact that both these options are gradeable so that players can define the level of reality they're prepared to expose themselves to. Car damage, tyre wear, etc. can all be switched on or off regardless of which of the two basic options is chosen. No-one can complain that *F1* is too easy, or too hard – Psygnosis has given everybody the tools to define their own game.

Of course, what really matters is playing the game, and, away from the comprehensive list of simulation



F1 **tries to capture the feeling and atmosphere of each circuit with copious amounts of track detail**









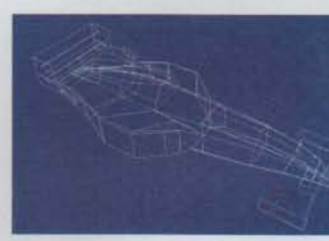
options. *F1* provides an absorbing, believable and thrilling ride. When the player's car is accelerating past 100 miles per hour, it actually feels as though the car *is* travelling at that speed. Plus, at all times, the handling is perfectly simulated - like *Sega Rally* on the Saturn, this title impeccably captures that feeling of momentum which is so elusive, but so important to racing games.

In terms of graphics, *F1* isn't quite the miracle worker the gaming press was led to believe. True, its engine can cope with a great amount of cars on screen without slow down, and, yes, the authenticity and detail on show in the backgrounds is amazing. But there are down-sides. The peripheral scenery has a tendency to block in rather late which can be disorientating. Furthermore, on most of the selectable views, it's very difficult to tell when a corner is approaching and which way it goes. This could well be a real hazard of *F1* racing, but **Edge** suspects there would be many more accidents if it were really this difficult to tell what's happening 100 yards ahead.

In the end, *F1* is a definite success. The designers have taken what many would describe as the least likeable and least exciting racing game sub genre (the ultra-realistic *Indycar 2* was desperately dull) and created an addictive and immensely playable product. The sheer number of different circuits (every one in the 1995 season) alone marks this out as a prominent title, but when you consider its great car handling and singular authenticity as well, it becomes a veritable benchmark. Racing sims have always been an acquired taste, but now it looks as though they are a taste worth acquiring.

Edge rating:

Eight out of ten





The polygon cars in ***F1*** **are fairly complex, as this wireframe shows**





In ***F1*****, the race can be viewed from several angles. Those which take in the action from a low viewpoint (left) can make anticipating bends a problem. Racing is much easier in the higher-angled view (right)**

A meeting point for media capitalising on the digital entertainment revolution. books, CD-ROMs, and more...

nuMedia

This month, a computer system goes mad and kills people, Mulder and Scully face the paranormal in comic form and Peter Gabriel creates a strange CD-ROM in which you get to control a 'sperm cursor'. Summer is in full swing, Ibiza beckons and Balearic CD compilations flood the market, while Virtual-IO's pseudo-VR headset finally gets the **Edge** treatment (Anadin not supplied).

in **association** with ocean

books

Gridiron

- Philip Kerr
- £5.99
- Vintage
- ISBN 0-09-959431-5



The Gridiron of the title is the latest in fully automated office buildings. Controlled by a central super computer: there are more than a few parallels with the maniacal HAL from Arthur C Clarke's *2001: A Space Odyssey*. Kerr however, gives this robotic character depth, and real gripping menace, as it stalks its hapless prey.

Kerr plays on the Frankenstein Complex – the irrational fear that some people have of machines, especially those that either have a human form, or exhibit human characteristics. Ishmael is the stalking monster that the defenceless humans must outwit if they are to survive and reach the finale.

Fortunately, technology doesn't overshadow the human characters in this novel. They are all well defined, and demand great empathy. Kerr crafts the interplay between his players with care, and the slow build of tension, to its nerve jangling end.

Gridiron is another testament that Kerr is one of Britain's best-selling thriller writers and his label as England's answer to Michael Crichton is well deserved. If you're looking for techno-fiction that has cutting-edge technology mixed with well-defined characters, in a page-turning story, you will not be disappointed with Gridiron.

Showstopper!

- G Pascal Zachary
- £8.99
- Warner Books (Little, Brown and Company)
- ISBN 0-7515-1629-5



Zachary's fly-on-the-wall account of the development of *Windows NT* pushes the technical detail to the background, concentrating instead on the personalities that made up the programming team. The portraits that Zachary sketches are vivid, and draw the reader into their lives as they battle to complete the PC operating system.

Written with a seamless, flowing style, we meet team leader David N Cutler, a technological Moses leading his flock. You will read about his missionary zeal and unbelievable temper and attitude towards his colleagues. His team's personal triumphs and disappointment all follow in the unfolding drama. Like some hi-tech soap opera, we find ourselves enthralled by the personalities that Zachary describes.

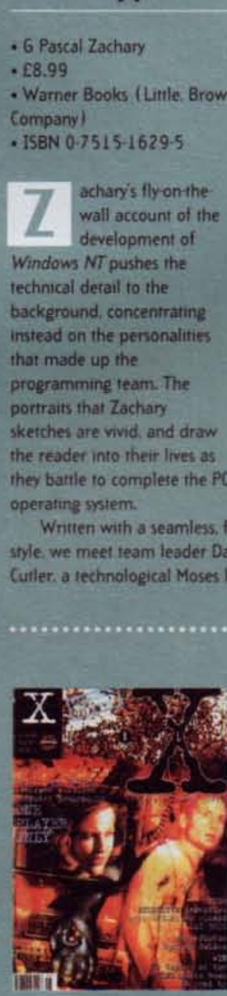
On Monday 26 July 1993, after five years of feverish work, *NT* was finally released. The effort and cost described here may never be seen again. Showstopper! gives the reader an inside view of what could become a story of folklore in the computer industry. With Zachary's effortless style, well-rounded character sketches, and attention to detail, Showstopper! will doubtless achieve classic status. Highly recommended.

X-Files Comic

- Manga
- £1.25

Most of the X-Files-related mags stuffed into the sci-fi section at WH Smiths are invariably poorly put together trash, thrust out on to the market by shoddy publishing companies seeking to exploit a healthy TV phenomena. Fortunately, the X-Files comic is an exception to the rule.

For a start, the stories featured so far have been intelligently written – each one more or less capturing the narrative style and consistent themes of the TV show. The recent two-parter, 'Hallow Eve', for example, was an interesting and eerie exploration of the African Eve theory, and this month's 'One Player Only' features a computer programmer possessed by some AI code he tried to store in his mind.



In terms of visuals, there have been some complaints that the Mulder and Scully drawn in the comics bear little resemblance to their TV counterparts, but this isn't really important. The art is actually passable, if not amazing, and some interesting experimental elements are creeping in. The covers are gorgeous, too.

There's also an informative news section which should be growing in the next few months, and a series guide, covering two to three shows per issue. Altogether, a reasonably good read that would benefit from a few more pages of features and perhaps longer stories.

CD-ROM

Launch

- 2 Way Media, inc
- Macintosh
- Price $10

CD-ROM magazines are usually over-expensive, limited affairs which seek to combine yoof TV shows and lifestyle mags into one interactive package. Of course, they usually fail miserably – often due to the fact that they're poorly put together and way, way too short. Which is what makes *Launch* a refreshing change.

Split into several sections, *Launch* attempts to cover a whole gamut of interests from music and film, to animation and videogames, while still instilling each element with plenty of detail.

All the sections have their own novelty graphical interface: music reviews and videos are accessed from The Hang, a screen looking like some slacker bachelor pad. Clicking on objects accesses videos, album reviews and music retrospectives, all of which are interesting.



The content of *Launch* is varied, ranging from strange cartoons (top) to film previews (above)



Presentation is as impressive as content. The main selection screen (right) is colourful and eyecatching, as is the music 'Vault' (left)

The movie section contains previews of two films – The Trigger Effect and Last Man Standing – and these work like the preview sections in Film '96, with clips of the movie intercut with voice-overs from a reporter and interviews with the stars. Again, it's professionally put together and interesting, if rather short.

There are a few additions to the standard CD-ROM mag experience: the animation section presents two short and odd cartoons, and there's also a game preview section. The only problem is, a lot of the content is orientated towards America. You'd be hard pushed to find anyone in the UK who cares that much about pseudo-R.E.M. rock outfits like The Gin Blossoms or Cracker, both heavily featured.

Edge is still unsure whether CD-ROM mags, even those of the quality represented here, are a good idea. Why not watch Film '96, then The White Room, then read FHM? *Launch* is good, but still rather limited in its range and depth. Also, because the mag is bi-monthly, the info contained within may become dated rather quickly.

Eve

- Real World/Star Wave
- PC/Mac
- Electronic Arts

The initial task you are given in *Eve*, Peter Gabriel's latest CD-ROM experiment, is 'to create life by fertilising an egg with a sperm cursor'. A good indication that this soon-to-be-released follow-up to the singer's *Explora 1* disc will not follow the usual unimaginative music CD-ROM recipe.

Yes, instead of bunging in a few music tracks, sprinkling on some biography, and adding a complete discography just for good measure, Gabriel has decided to change the plot altogether and come up with something totally bizarre and off the wall.

Eve is a kind of avant-garde musical adventure in which the player must guide Peter Gabriel (Adam) through a series of surreal worlds in order to find Eve and go back to paradise. Gabriel bills the disc as an exploration of human relationships through the context of the first human relationship and, indeed, during the adventure you discover plenty of characters who utter various wise comments on male/female relationships ('all men are parasites on women' being one of **Edge**'s particular favourites).

The worlds you must explore vary greatly, moving from a desolate muddy landscape through an industrial dystopia to the garden of Eden, and all are filled with interactive elements for the player to fiddle with. One screen allows the player to control a puppet Peter Gabriel, which is hilarious; he may be a touch pretentious, but at least he still has a sense of humour.

Interestingly, throughout the game, you also have to collect musical samples from four of Gabriel's songs. At the end of the adventure, you can mix these tracks and create accompanying videos. It definitely sounds like a novel concept, and if constructed well, could take *Eve* way beyond the usual music CD fare. Peter Gabriel is very concerned about the creative elements of the product. 'When an artist touches something real, they have created a tool. Multimedia is a wonderful place for investigating art as a tool kit and that's the direction I want to see CD-ROMs go: encouraging people to take the role of artists themselves and to involve themselves directly in the decision-making process'. At the moment, *Eve* looks like an interesting,



Peter Gabriel sits in the bath with an internationally renowned artist and plays 'pass the soap bubble' while naked statues look on. Referring to the CD-ROM, *Eve*, as weird would be an understatement

Continued next page

Continued



Eve features the work of Helen Chadwick, Yayoi Kusama, Cathy de Monchaux and Nils-Udo – all of which bring very different styles and influences to the visual/thematic content of the disc. 'These are all artists I know and love,' explains Gabriel, 'so working with them has been a real pleasure.'

if rather grandiloquent idea. Each of the many locations is well put together, graphically adequate (the visuals have been created by four 'famous' artists) and compulsive in a strange kind of way. But who exactly are the makers aiming this at? Gabriel fans? Art lovers? Gamers? The question has to be, is there a market for expensive, arty music CD-ROMs, and if so, will there be enough here to keep everybody entertained?

Music

Electronic
Raise the Pressure

Parlophone

Seemingly oblivious to the changes that have affected dance music since their excellent last album, **Sumner** and **Marr** have released another, that's the same. Except worse.



Sumner's voice, a drone to say the least, needs strong songs to support it, and the songs on Raise the Pressure just aren't strong enough. 'Forbidden City' is the standout track, reminiscent of Electronic's best, but the rest blend in a manner not dissimilar to a Stars on 45 single. Not that **Edge** listens to those, of course.

Cafe Del Mar Volumen Tres
Various

React

The Cafe Del Mar series offer a blissed-out taste of the more relaxed end of the Ibiza scene, unafraid to place straight flamenco next to emotive techno. Recognisable names are thin on the ground, though Ibiza stalwart **Jose Padilla** once again comes up trumps. Elsewhere the tracks mine the rich seam of uplifting trance, taking time out for acoustic land, courtesy of **Pat Metheny**. It'll be anathema to the nosebleed techno freaks, but summer vibes don't come much mellower than this.



Ridge Racer
Various

JVC

This is the second in JVC's series of CDs based around Namco game music and it's definitely more interesting than the *Tekken* effort **Edge** looked at in E34. Here, all the *Ridge Racer* tunes have been totally remixed (instead of just the one as in the *Tekken* CD) and the artists responsible have opted for many different genres. Hence, '*Ridge Racer* Jazz step mix' is a weird drum n bass/jazz cross over, 'Win Win Win' is a garbled industrial noise and 'Rare Hero power mix' is a kind of late-eighties acid-house fest. Cheesy, pointless, but definitely entertaining.



The Egg
Albumen

Indochina

Sometimes you can get too much of a good thing. As with **Robert Miles**' debut album (which essentially covers a load of tuneful, saccharin-sweet reworkings of the pleasant chart hit 'Children'), this first effort from Oxford band, The Egg, also recycles a successful formula throughout. And suffers for it just as badly.



Initially, Albumen's jazz-infused psychedelia hooks well. Wah-wah guitars, pianos and flutes twist and turn over a rich background of strings providing the kind of sound that you'd expect to hear accompanying a seventies road movie. It's funky, groovy and very listenable, but after four or five tracks you begin to crave something else.

Spiritually Ibiza 2
Various

FFRR

Balearic compilations usually mean one thing – anything goes as long as it's mellow. And this is true of all the tracks here, including Art Of Noise's dream-like 'Moments In Love', the tuneful simplicity of It's Immaterial's 'Driving Away From Home' and **Paul Oakenfold**'s mix of 'Solid Gold Easy Amex's Enjoy' – a tune so unassuming that it could easily be the end-sequence music to a Japanese shoot 'em up...



Despite some nostalgic moments, Spiritually Ibiza II is just another retrospective of 'nice' tunes. If you find yourself lying on a beach in Ibiza watching the sun rise, these will do nicely.

Volume 16
Various

Volume

Indie collections are usually grim affairs, compiled, it seems, by clueless record execs who still think 'Sit Down' by James is a 'happening' track. In contrast, the Volume compilations have consistently represented both value for money and, more importantly, decent music.



Volume 16 delivers the usual mix of rare and exclusive tracks, this time including great contributions from Beck and The Afghan Whigs, and surprisingly good stuff from Dubstar (usually rather ordinary) and old but lovable goths, The Cure.

The compilation also comes with CD-ROM material, an occurrence which will no doubt become commonplace over the next few months.

Gadgets and Gear

Interactor

Developer: Aura
Release: September
Price: £70

Billed as a virtual-reality backpack, the Aura Interactor is a cushion-like strap-on peripheral which players attach to their



At last, the Interactor will bring vibrations to the videogame

backs and then plug in to any console or PC via the headphone or audio-output socket. When switched on, the device reacts to bass sound waves emitted from any game, and jostles and bumps the player accordingly – giving a kind of immersive, 'I'm really there, man' effect.

The Interactor was, bizarrely enough, created by a team of American defence scientists who used to work on Ronald Reagan's strategic defence initiative project (at least that's what its press release claims). Even more bizarre is the fact that the technology the device is based on – named the 'actuator' – was allegedly designed to combat vibration when the space shuttle lifts off.

Edge isn't sure which is stranger, the fact that people actually have the desire to be pulsated while playing videogames, or the fact that it took a team of NASA scientists to come up with the technology to indulge this desire for game-related vibrations. Apparently, the device, which has already been bought by 1.4m people in the US, also works with TV: Mary Whitehouse might have something to say about that.

Aura Interactor • £69 • Contact tel 0161 973 0505

Virtual i-Glasses

Developer: Virtual-IO
Release: Out now
Price: $599 to $799



The comfortable and sturdy i-Glasses headset comes with stereo headphones

The Virtual i-Glasses by Virtual-IO technologies represent a slight advance in the HMD market. Similar to the Cybermaxx headset released last year, the wearer sees two small LCD screens but the brain interprets these as one picture. Unlike the Cybermaxx, though, the screens don't have to be viewed through eye-poking protruding lenses – the image 'floats' before your eyes.

The glasses are also compatible with any games console, TV and, if you purchase the relevant adaptor, your PC (although the glasses are not yet compatible with SVGA). The glasses will work with almost any game but they will only produce a 3D 'offset' image with compatible titles such as *Descent*, *Hexen* and *Heretic* – an impressive list. With the rest you're looking at a 2D display which just happens to be very close and looks very big (it's supposed to resemble an 80-inch screen).

The i-Glasses' resolution is a bit low, so games sometimes look rather blurry and badly coloured, and it's also possible to see all the RGB points, rather like putting your face right up to the TV screen – not so good for your eyesight.

If you have the cash and don't mind looking like a goon in a helmet, the i-Glasses are a fun introduction to HMDs.

Virtual i-Glasses • £799 or £599 without PC compatibility • Contact PSA Systems, tel/fax 01245 237585

Competition

Win a Microsoft Internet Starter Kit

For something supposed to revolutionise everybody's lives in the coming years, the Internet is still incredibly difficult to get onto. There is a huge choice of Net navigators and providers out there, each promising the fastest, cheapest, beste, most reliable access to cyberspace, that you can possibly get hold of. It's a tough choice.

For those who have installed *Windows 95*, Microsoft's *Internet Starter Kit* is one of the best options. The kit comprises the latest version of *Explorer*, Microsoft's Net navigator, a set of demonstration files which contain versions of top Web pages for you to look at before connecting to the Internet, and 30 days free unlimited hours on the info superhighway (if you choose *The Microsoft Network* online service as your access provider).

Apart from being developed by the company which perhaps best understands the PC, *Explorer* has a number of other key attributes. It supports all the new HTML extensions such as scrolling marquees, inline AVI files and background sounds, and can be used to view 3D pages created using VRML. Furthermore, the software includes several features to make surfing the Net less arduous and expensive – the HTTP KeepAlive protocol enhancement improves downloading speed, and Fast Text makes sure that text downloads first and slow-loading graphics afterwards, so you can get the written information you need straight away.

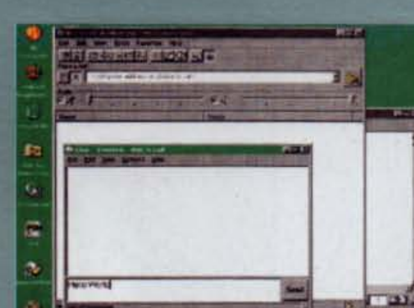
In association with Microsoft, **Edge** has 25 *Starter Kits* to give away. To stand a chance of winning one, just answer the following question:

Q What British newspaper did Microsoft pay to be distributed free on the day *Windows 95* was launched?

Please send your answer on a postcard or the back of an envelope to Microsoft Competition, Edge, 30 Monmouth Street, Bath, BA1 2BW. Closing date: 18th September 1996.







With the *Explorer Internet Starter Kit*, Microsoft makes getting on the elusive information superhighway much easier for beginners. The service has a number of attractive features including 'fast text' and the HTTP KeepAlive protocol enhancement which improves downloading speeds

Taito resurrects its most famous double act, Bub and Bob, and follows a more traditional path with *Ray Storm*. And Sega brings the scrolling beat 'em up to the third dimension with *Dynamite Keiji*...

Ray Storm





With such powerful weaponry, the action in *Ray Storm* can get rather frantic (above)

Originally unveiled at February's AOU show, *Ray Storm* is a continuation of Taito's ageing *Ray Force* series.

Like Namco's update of *Xevious*, *Xevious 3D/G*, *Ray Storm* takes old themes and gives them a lick of polygon paint to achieve depth in its playfields.

Mixing scalable sprite-based and polygon-generated enemies, the game presents classic vertically scrolling shooting action over eight levels of varied scenarios including deep space and planet-based encounters.

Two types of ship are available, the first (R-Gray 1) offering eight-way lock-on firepower, the second (R-Gray 2, predictably) offering an unmatched 16-way version, each type being available in automatic or manual selection mode, and joined by other weapons including standard shots, laser beams and bombs.

Taito's custom hardware appears to be more powerful than Namco's off-the-shelf System 11 counterpart, with the obvious upshot being that it's a visually more striking game – it's faster, its special effects are more impressive, and its detail level is generally higher.

Though hardly laudable for originality, *Ray Storm*'s super-intense action and unrivalled firepower should ensure it wrests attention from Namco's higher-profile release when the two square up on UK soil soon. **E**



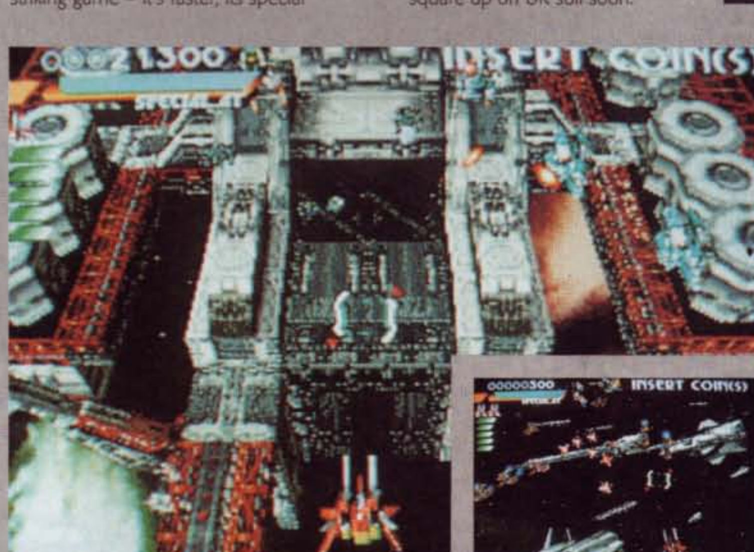


***Ray Storm*'s backdrops are detailed and atmospheric (left). Large-scale special attacks such as these blue bombs (above and inset) are almost overwhelming**





Some of the enemies' laser power is ridiculously over-the-top – a visual feast!



***Ray Storm*'s level of detail is impressive – this space station (above) is packed with complex textures. Your craft approaches a fleet of alien ships in deep space (inset)**

Developer:	Taito
Release:	TBA (UK)
Origin:	Japan

Bubble Memories







Those all-new big bubbles in action (main). Many familiar *Bubble Bobble* faces return – albeit in a rather more weighty form (above left)

Bub and Bob are the closest things Taito has to company mascots in the style of Mario and Sonic – a fact indicated by the cute dinosaurs' constant invasion of the gaming community's consciousness.

After debuting in 1987's *Bubble Bobble*, and appearing in its two pseudo-sequels (albeit in human form), *Rainbow Islands* (1989) and *Parasol Stars* (1991), then in 1995's proper follow-up, *Bubble Symphony*, (not to mention the two popular *Puzzle* spin-offs) the duo return to the coin-op scene in *Bubble Memories*, a game which expounds on the simplistic capture-enemies-in-bubbles theme.

Now able to blow variably sized bubbles depending on the time the fire button is depressed (enemies have to be captured by the biggest variety), Bub and Bob can also swim – a selection of water-filled levels make this feature a necessity.

But it's old-school *Bubble Bobble* playability that's at *Memories'* core, and the eagle-eyed will spy many original enemies popping up in remixed garb. With new instalments of this quality turning up, the series certainly deserves to be around for a while.





Visually, this is the most extravagant of the series, while gameplay is largely untouched

Developer: Taito
Release: TBA (UK)
Origin: Japan

Dynamite Keiji





AM1's efforts to make *Keiji* more than just another scrolling beat 'em up are realised with gunplay (above left) and some outlandish moves

Sega's ST-V development is slowly picking up momentum, with scrolling combat game *Dynamite Keiji* following *Decathlete* first in to arcades and then on to the Saturn.

A one or twoplayer simultaneous affair, *Keiji* takes inspiration from the likes of *Double Dragon*, allowing players to collect extra weapons throughout, as well as being able to fight with more traditional punching and kicking techniques. The range on offer is comprehensive, from the primitive (axes) to the more effective (six-shot pistols) to the downright over-the-top (missile launchers).

Capable of moving in eight directions throughout the 3D environment, you also have special techniques (spinning throws, etc) which, while not exactly equalling those seen in fully fledged beat 'em ups such as *VF2*, add a much-needed diversity to the genre.

Sega's AM1 team (previously responsible for coin-ops such as *Indy 500*) has squeezed enticing visuals out of the ST-V board, crafting convincingly texture-mapped polygon characters with detailed backdrops moving at speed.

Despite – or perhaps because of – their generally shallow nature, scrolling beat 'em ups are ideal arcade fodder, and *Keiji*'s novel graphical approach and gameplay twists bode well for its coin-gobbling potential.

Developer: Sega (AM1)
Release: TBA (UK)
Origin: Japan







***Keiji*'s polygon nature ensures that the views it presents are refreshing for the genre**

Namco Museum Vol.3

Namco dusts off the cobwebs and reanimates six more classics. Hold back the tears as you realise where all those 10-pence-pieces of your youth went

Still showing no signs of running out of classic games to resurrect, with *Museum Volume 3* Namco brings eager retrofans some of the most evocative memory-lane trips yet. If you're anywhere around your mid 20s, the electronic reveille that greets the start of *Galaxian*, speedily followed by the low, mean revving of the formation of alien space bees, will have you choking back the tears in seconds. You might be pleasantly surprised immediately afterwards, too, as the game has stood the test of time better than **Edge** might have imagined – it's still a challenging and tense shoot 'em up, even after all these years and glitzy sequels. It's probably not the best game on offer here, though – tasteless underground inflate 'em up *Dig Dug* is a super-intense pure arcade game, where, win or lose, every level is over in 30 seconds.

The rest of the pack is less interesting (boasting as it does two sequels to earlier *Museum* titles and two ultra-obscure coin-ops from the early eighties), but no less entertaining. *Pole Position II* adds three new tracks to the original's and ramps up the difficulty to such an alarming degree that all but the most dedicated and persistent will be left whimpering in a corner of the room. *Ms PacMan* is *PacMan*, but with a girl in it, and *Phozon* is an impossibly strange game involving the player steering an atomic nucleus around and fusing it with other floating nuclei to form preset shapes, while avoiding deadly spinning atoms. Your 'ship' can soon end up taking up a quarter of the entire playing area, and few games since *Robotron* have required the player to keep an eye on as many things at once.

The black sheep of the pack is *Tower Of Druaga*, a wildly tedious and snail-paced maze game which was apparently a huge smash on the Famicom in Japan many years ago. **Edge** has no idea why.

The user interface on *Volume 3* has also been improved, and difficulty settings, vertical full-screen modes and so on can now be easily accessed from a series of drop-down menus, written in English, while the games are actually running, which more or less eliminates the last reason you could possibly have for waiting for Sony and Namco to finally get their fingers out and release the Museum packs in Europe (although, collectors note – apparently the US/European versions of *Vol 2* will feature *Super PacMan* in place of *Cutie-Q*). Get down to your importer now – this is still the finest retro money can buy. ■





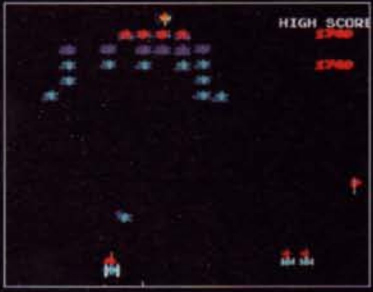
Though quicker than the original, *Ms PacMan* (above) was a cash-in title. The museum itself (right)

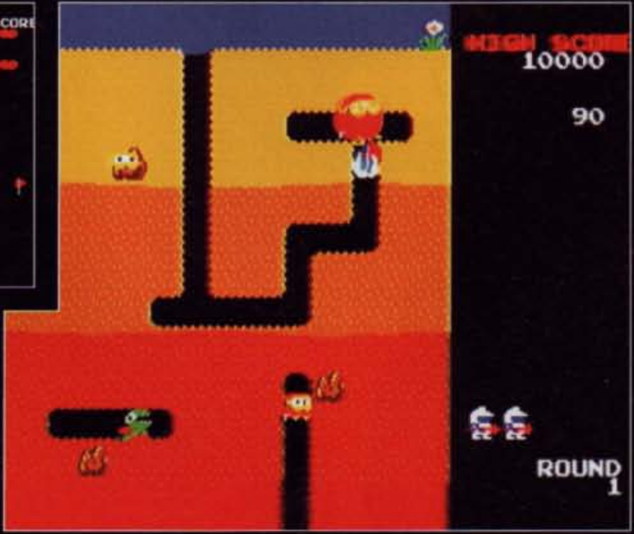






From top: *Tower of Druaga*; *Pole Position II* and *Phozon* – definitely a mixed bag





***Galaxian* (above) has stood the test of time exceptionally well. *Dig-Dug* (right) is still fun, too**

Format:	PlayStation
Publisher:	Namco
Developer:	In-house
Price:	¥5,800 (£40)
Release:	Out now (Japan)

Rebelstar

Back in 1986, if you were looking for a Spectrum killer app, the last place you'd look would be in the wargaming genre. Even Firebird missed this 'sleeper'

Rebelstar began life in 1984 as a twoplayer-only, single-screen Spectrum skirmish wargame called *Rebelstar Raiders*. It was published by the long-since defunct Red Shift at full-price and sold less than 'some'.

A couple of years later the game's author, **Julian Gollop**, (after a brief flirtation with a Speccy game called *Chaos*) added more features to the game (each playing area became several screens in size), gave it a oneplayer option, dropped the Raiders and placed it with Firebird.

Firebird looked at *Rebelstar*, saw a simple 2D wargame which understandably meant niche market and pumped it out in 1986 at a very reasonable £1.99, whereupon it promptly sold thousands.

Rebelstar introduced the concept of sugar-coated wargames, where a strategy game with sufficient dressing up would appeal to the middle-of-the-road consumer. It also introduced two (including line-of-sight, amongst others), then-revolutionary concepts in turn-based gameplay: action points and opportunity fire. Your little party of Raiders (including droids with cutters to get you through air-locks) each had a set number of points to be used during their turn. Points were expended by moving, readying weapons and the like and once a character had expended all their points their turn was complete. Thus planning a character's actions became vital to success.

Part of the planning was deliberately not using up all your character's action points during a turn to allow them the chance for 'opportunity fire'. This meant that when the computer was moving its forces around and one of them stumbled into the line of sight of one of your men who had APs left, your Raider would open fire - across several screens sometimes - in an attempt to hit the enemy. If successful, the Spectrum's graphics and sound hardware would be put into overdrive - the hit enemy would flash to the accompaniment of a repetitive, dull noise. But in those days graphics meant little compared with the gameplay.

Rebelstar was a true gaming experience. The computer opponent was vicious, yet with luck and a good tail-wind could actually be defeated. The game was easy to play since it didn't swamp you in loads of unnecessary info, something wargames still do, and the challenge was so strong it kept you playing for weeks. It was not out of the ordinary for players who lost a favourite Raider to simply pull the plug, make a cup of tea and wait the five or so minutes for the game to load back in.

Firebird released a sequel in 1988, which didn't perform as well. After parting Firebird's company, Gollop created *Laser Squad* in 1989 and *UFO - Enemy Unknown* in 1992. After *UFO* came *X-COM - Terror of the Deep*.

Gollop's company, Mythos Games, is currently working on *X-COM - The Apocalypse*, on PC for MicroProse.





The Raiders prepare to attack (above), while the aliens get themselves into cover (left)





There's a nasty thing in the water (top). The aliens gather for a counter attack (above).

Format:	Spectrum
Publisher:	Firebird
Developer:	Julian Gollop
Price:	£1.99 (1984)



Even out in the open you can improve your chances of survival by hiding in long grass. It's not a tactic that'll save you for long, though

Chase HQ collection

Taito's once-popular driving coin-ops, *Chase HQ* and *S.C.I.* (*Special Criminal Investigations*), are currently in the process of being translated to the Saturn in the form of a two-in-one package, due for release in Japan on August 9.

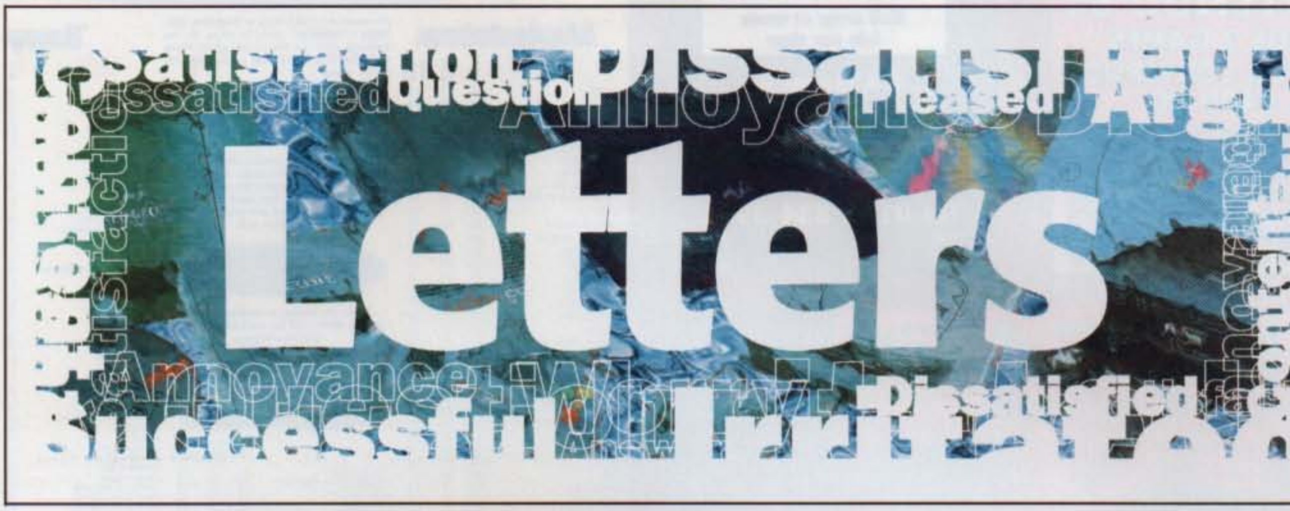
Both games revolve around the same theme: chasing and capturing criminals, the first (which originally appeared in 1988) forcing you to ram them with your vehicle; the second (from 1990) also giving you the luxury of a handgun.

Though hardly groundbreaking, both coin-ops attracted considerable audiences, and their appearance on the Saturn is further evidence that it's the favoured format of Japanese softcos eager to excavate the contents of their ample back catalogues.





The second game, *S.C.I.*, is the most action-packed



Express yourself in **Edge**. Write to: **Edge** letters, 30 Monmouth Street, Bath, Avon BA1 2BW

I had to laugh when I read your description of Nintendo as 'the king of the jungle in terms of defining what videogaming is all about' (page 10, E34). While Nintendo can take some credit for its original ideas, bear in mind that it is entering a game where all the rules and conditions have been defined by Sony and Sega. You forget ground-breaking games like *Virtua Fighter* and *Ridge Racer* or the fact that, while Nintendo was talking about setting new standards, others were *doing* it. It is going out to meet its competitors head-on, not on a different level. Although introducing some new ideas, is its hardware and software really going to be that innovative? I seriously doubt it. There is no 'one' king of the jungle. I'd have to refer you back to **Edge**'s top 50 (E30) to find a good selection of people who collectively define videogaming.

Andre Nieuwenhuize
andre@southern.co.nz



Forget the N64, says Andre Nieuwenhuize, 32bit has been breaking ground for some time

Have you really not taken in what's been said about Nintendo's 64bit hardware? Has **Edge** been wasting its time extolling the virtues of *Super Mario 64*? Of course Nintendo is taking on its competitors on a different level – its hardware and some of its software represent a marked shift onward from existing 32bit systems.

Many of the best console games of the last ten years have been produced by Nintendo, and this fact alone is what's put the company in the position it finds itself. No, there is no one company upon which to place the mantle of sole pioneer, only one company that deserves recognition for doing more than the rest, and that's Nintendo.

I think Nintendo knows best why it opted not to go for CD-based games, although their potential is not being exploited thoroughly. Living in this corner of the world can make the reason very clear. In my opinion, CD-based games are prone to piracy. You can get a pirated *Tekken 2* for as little as B$30 (£13). Piracy is big business around this region since we don't have a clear-cut copyright law.

Pirated software is easy to obtain and cheaper compared to the genuine article, with the only indication of a pirated game being the non-black base of the CD. So, Nintendo's decision to go for a cartridge-based system is wise – hopefully the pirates will be set back a few years for the N64.

Haji Sulaiman
Negara Brunei Darussalam



All official Sony PlayStation software is stored on black discs, but increasing CD piracy is becoming an epidemic. See letter from Haji Sulaiman

Nintendo has probably been stung by piracy more than any other videogame company, and it's likely that this was a consideration when it opted to pursue cartridge technology. Despite Sony's efforts to make its system's games non-piratable, copied PlayStation (and Saturn) software is rife – and growing.

While there are gamers willing to take a cheaper option, software piracy will not go away, and cartridges are not the answer to combating it – pirated silicon is still a big-money industry in the Far East.

What an ugly phenomenon the home success of the PC is. Yes, there will always be a place for machines that let a home user run complicated games that need a keyboard and mouse as well as simpler console stuff, and do proper computer things (word processing, programming, comms, etc) as well, but as a computer to fill the role the PC is miles away from being an ideal package. It's oversized, underpowered, badly designed, difficult to use, lacks a standard specification and, particularly considering a large proportion of potential computer users are children living off their parents, hugely overpriced.

In an ideal world, there would presently be a compact machine with similar chips to

those of the PlayStation, maybe, but with more memory and a keyboard, mouse, disk drives and monitor compatibility that would make it a proper computer that could outperform a £1,500 PC for multimedia purposes but retail at half the price. It wouldn't be as good as a PC for 'serious' software, but you hardly need to be able to run £300 word processors and spreadsheets if you merely want to write the occasional letter and keep track of your home accounts.

Of course, if a machine was to take over from the PC as the home computer of choice it would take time. Without a large user base, the only way for a computer to get the software it desperately needs is to take the route of the Commodore 64, which, by bringing advanced graphics capabilities (this was the early eighties, remember) to the home, was so appealing to developers that they developed software for it even though there was hardly anyone to sell it to. Consoles such as the PlayStation and N64 are to polygon graphics roughly what 8bit machines like the C64 and NES were to 2D, so a new machine should aim to take this to a higher level, with much more convincing graphics. I've not seen Sega's Model 3, but a home computer with similar power could do the trick.

The only real possibility for someone making such a machine in these unadventurous times lies with the Amiga brand: it's still a living format, and an all-new machine is apparently in development. If you would like future games computers to be machines actually designed for the purpose, you'll hope that they'll make something great.

Grant Sutcliffe,
Rossendale, Lancashire



For home computing to rival the consoles, the Amiga is the answer, says Grant Sutcliffe

Your dream games-oriented computer sounds an attractive proposition, and, theoretically, a hungry market exists for a true successor to the Amiga.

But the home computer boom has boomed, and it's likely that any manufacturer contemplating a new home computer system, whose focus is gaming, would surely be apprehensive in the face of established console systems and, especially, the support they receive from the world's best software developers.

Establishing a new format is certainly the biggest obstacle. In the eighties, markets for new machines could be fed more easily than those of today – filling 48K with code and graphics is a breeze compared with the prospect of a 650-megabyte CD (Shiny Entertainment's **Dave Perry** famously bashed out an 8bit release in merely a few days) – and shelves could be filled with new products on an almost daily basis during the peak of computer gaming.

Incidentally, if you find PCs too expensive, you'd probably keel over and die at the price tag which would accompany the Model 3-powered home computer you long for...

It seems worrying that after the release of the Saturn and PlayStation and with the arrival of the Nintendo 64 imminent, retrogaming is so popular. Obviously, people have been less than thrilled with the gameplay behind the flashy 3D graphics. A few noticeable exceptions, such as *Mario 64* and *NiGHTS* look set to break new ground, but in general there is a continual onslaught of beat 'em ups and driving games, competing through technical specs rather than originality.

It's not surprising that gamers are looking for different types of games but does anyone really want to play the eighties 'arcade perfect' shoot 'em ups which are on offer? Arcade games were then, and still are, mostly driven by advances in technology, not radically new game formats. It was the 8bit and 16bit home computer market that produced the newest game genres during the eighties, and the PC continues to fulfil that role.



Why hasn't Geoff Crammond's *The Sentinel* been upgraded to 32bit, asks Brian Smith – even today it's better than most 'next gen' games

If the 'next gen' machines are to use old game formats then they should at least choose those worthy of reviving. The back catalogue of 8 and 16bit computer games offers a wealth of innovative games that could be updated to the Saturn, PlayStation and Nintendo 64. As programmers tend to push the limits of the available technology, reinterpreting their work on higher spec machines would allow breathing space to flesh out the graphics and increase the frame rate, etc. As an added bonus most of the companies that released them have disappeared so the licensing would be cheap or nonexistent.

My personal vote for a game to receive the 'next gen' treatment goes to *The Sentinel* by **Geoff Crammond**. A 60 frames per second screen refresh rate, texture mapped scenery and an ambient soundtrack would spice it up nicely. And because its levels are fractally generated even the Nintendo 64's carts would be able to hold it!

Brian Smith
Nettleham, Lincoln

Although the focus in retrogaming of late has moved towards reviving the coin-op scene, old computer games continue to be updated – witness the likes of LucasArts' *Ballblazer Champions*. But you're right, there is a goldmine of aged titles waiting to be dusted down, spruced up, and delivered to a nineties audience starved of quality software. **Edge**'s own list would have to comprise *The Sentinel* too, along with *Elite*, *Stunt Car Racer*, *Paradroid*, *Thrust*, *Virus*, *Uridium*, and *Exile*, among many others.

I was very interested to read of David Nunn's disillusionment with Sega (E34, letters), as it struck a chord, though my grievances are instead with Nintendo.

I, and I'm sure there are many others, remain very sceptical of Nintendo. Despite excited reports that Nintendo stole the show at E³, I'm still largely unconvinced that there is a product really worth waiting for. E³ was a two-game show for Nintendo and everything else, particularly thirdparty software, looked positively atrocious, and certainly wasn't showing any graphical or gameplay advances to warrant a three-year development period.

Maybe it's the waiting that's made it such a disappointing anticlimax? Launch date after launch date has slipped, promises and excuses in their place. Now it's here, other than *SM64*, it just

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doesn't live up to the promise. So where now?

For me, especially after the showing at E³, the Saturn has the most promise. Bizarrely, although it was an excellent all round lineup, it was the one machine **Edge** chose to ignore, instead concentrating on lacklustre PlayStation stuff. A shame, when *NiGHTS*, *Sonic* and *Manx TT* etc had been updated for E³. Perhaps even stranger to note, though, is the fact that Sega are pretty much number two in the US and Europe, after being top dog for so long. Nintendo was in this unenviable position five years ago with the SNES, where it remained for its entire lifespan. But the software seldom disappointed and was always 'stretching the machine to its limits'. Sega is finding itself in a similar situation with the Saturn now. Coders such as Dave Perry talk of the Saturn's hidden power, and as developers, including Sega, spend some time and work on the hardware, I'm sure we'll be seeing some amazing steps forward in its performance in the years to come. Hopefully **Edge** will be there to witness it.

Mark Storey
Norwood, Sheffield

It's difficult to criticise Nintendo for holding back the N64's release, because the decision was made ultimately to please the videogame-buying public. **Edge** has a simple suggestion for N64 doubters: see it in action. Even the most anti-Nintendo gamer cannot fail to be charmed by the delights of *SM64* and recognise its value in the development of videogames in the nineties.

Sega is in a stronger position now than it has been for a while - in terms of intellectual properties, at least. The Sega brand may not carry the weight it once did, but its ability to deliver quality coin-ops is unparalleled, and it's the Saturn versions of these, not original titles, that will decide the machine's fate.

To reiterate, for what seems like the millionth time: **Edge** is not here to support one machine over another. As far as **Edge**'s E³ coverage goes, equal space was given to Sony and Sega, with the Saturn actually faring better in **Edge**'s report.



Mark Storey believes Edge's coverage of Sega's E³ presence was rather poor, while Nintendo's thirdparty 64bit software looked 'atrocious'

Isn't it nice to see that everyone is back to the Amiga/Atari ST days of piracy. Saturn and PlayStation software is all now readily available in pirated form for a fraction of the cost of the genuine article. I hope it all makes a massive dent in Sega's and Sony's profits, for they have treated we gamers with overwhelming contempt. Besides the vast majority of games on the so called 'next gen' machines being insulting in their nature of being pure crap, we Europeans have to tolerate delays, borders and reduction in game speed. Playing NTSC versions is a breath of fresh air in comparison. The very least companies should do is supply 50Hz and 60Hz code on the same disc, then at least we can aspire to the same technical level as our foreign friends.

Another thing I must get off my chest is that PCs are utter crap and have no right to be in the position they are. Never have I had the misfortune to use such abysmal computers. Their popularity is no measure of their quality. Yes, some software is good, but most is riddled with bugs and discrepancies, and the basic architecture is so outdated it has no place in our society.

We need a revolution in home computing, one which does not involve the expensive, unuserfriendly PC. If only the Macintosh had become the global standard, or at an even longer shot, Acorn's brilliantly designed, though admittedly not hugely successful, Archimedes. I can but pray that the whole thing comes to a head in a few years time. Ah yes - Microsoft loses $100 billion through PC crash. It's not envy, but why the hell is **Bill Gates** the richest man in the world? Microsoft is, like the PC, a pile of crap, especially when you compare its feeble attempts at a GUI (*Windows/Windows 95*) products to those of other machines. What we all need is a fresh start, with an affordable-to-all, intelligently designed, easy-to-use home machine. Keep the PC in the office by all means, if companies want to make life hard for themselves by supporting this machine with its badly designed, overpriced software. But we home users need and deserve better. Come back Clive Sinclair, all is forgiven.

William Matrix Dark
address withheld

Bear with me. Have you seen 'The Ten Commandments' with Charlton Heston? You know that bit when Moses comes down from the mountain clutching two stone tablets and announces, 'God has given me these ten commandments by which we are to live,' and goes on to tell his people that they must not commit adultery, steal and so on? Where's the bit when Moses says, 'Thou shalt not produce any 2D games on any next generation console'?

It seems that all companies are falling over themselves in a rush to produce another 3D fighting game, a 3D platform game and so on. Why, in the space of a year or so, have 2D games become a taboo? Just because developers have these powerful new machines it does not mean that everything has to be in three dimensions in order to utilise their full processing power. Why not simply have a 2D platform that is massive and visually stunning? Imagine a



With its incompatible, bugged software and ugly interface, the PC is a dreadful indictment of modern computing, says William Matrix Dark



Ben Franklin thinks the perennial delays and choice of 'silicon over optical' have blown it for Nintendo. Even if it does have *Mario 64*...

Sonic game in the Saturn 50 times the size of the original 16bit title. Or a *Sonic All-Stars* game with every single one of the original Mega Drive, Master System, Game Gear, Mega CD and 32X titles on one CD. It could be just the thing Sega needs to give it a boost in these times of nostalgia surrounding the likes of Namco's *Museum* collection.

James Francis, Rhondda, Mid Glamorgan

Developers cannot be knocked for using the strengths of the formats available to them. If 2D games were the prevalent style, **Edge** is certain that it would be receiving letters in support of the growth of 3D titles.

2D games aren't dead – yet. Nintendo, whose recent titles are the strongest examples of how to make a 3D game, is known to be working on a 2D N64 game featuring Yoshi, and games such as *Crash Bandicoot* stay firmly within the guidelines set down by classic 2D platformers of the eighties (albeit presented in a 3D environment).

True, however, fighting and racing games are the staple diet of 32bit, a reality seemingly based on developers' belief that 32bit owners only want arcade conversions. Not surprisingly, it looks as though Nintendo is set to break the mould with a batch of innovative product for its 64bit system. If only Sega and Sony would follow suit.



2D titles such as *Yoshi's Island* beat 3D games hollow, so why bother, argues James Francis

I admire Nintendo for trying to get its machine perfect, but all the delays will have put off many potential 64bit convertees. Unless Nintendo can secure a pre-Christmas release date its console is practically doomed in Europe.

The cartridge decision is not a wise move, either. I've heard Nintendo's cartridge-based games will cost up to a whopping £80. Is Nintendo money crazy?

With the Nintendo 64 probably due for a Spring '97 launch in the UK, I think most games players will make the same decision as I – buy Sony.

Ben Franklin, Kings Lynn, Norfolk

True, Nintendo's delays have consistently disappointed, and the distant European launch is likely to send many potential buyers into the arms of Sega and Sony. However, those that understand what makes Nintendo games special will wait (or at least buy an imported machine) so that they can play *Super Mario 64* – the most visually stunning and enjoyable game **Edge** has ever played. Incidentally, PAL software is more likely to be priced at around £60-70.

Q&A

Rely on Edge to cut through the technobabble. Write to Q&A, Edge, 30 Monmouth Street, Bath, BA1 2BW, or preferably, email queries to: edge@futurenet.co.uk

Q 1 Having constantly suffered as a result of Nintendo's disregard for the European marketplace, I was wondering if the PAL Nintendo 64 will be a bodged 50Hz machine with screen borders just like the NES and SNES before it? If it is, then I think I will be tempted to buy an imported machine.

2 What software will be available to coincide with the US launch in the Autumn?

3 Any news on whether there will be any compatibility between the US and Japanese machines (as there was with the SNES)?

Matthew Fleetwood, Lymm, Cheshire

A 1 The likelihood of a 'compromised' European PAL machine will be reason enough for many to consider buying an imported 60Hz machine. Diehard Nintendo fans who realise the benefits of an NTSC machine will probably not even consider waiting for the UK release



(which will run at 50Hz in order to be compatible with all UK TV sets). Whether Nintendo will optimise UK N64 releases to the degree that Sega has with Saturn titles such as *VF2*, remains doubtful, however.

2 *Super Mario 64*, *PilotWings 64* and *Cruisin' USA* will be released on 30 September, with titles such as *Shadows of the Empire*, *Blast Corps*, *Body Harvest* and *Killer Instinct* following in the weeks after launch.

3 NOA intially claimed the two territories would be incompatible but recent rumours suggest otherwise and it's possible NTSC software will be compatible between Japan and the US.

Q I have been reading with great anticipation about all the latest 3D accelerator cards that are coming out for the PC. However, with so many on the market, all with different specs and all supported by different development teams, I'm confused over which is the best suited for my P120 with 16Mb RAM. Have you any ideas about which one is best? Will a game written for one specific card work with the others? Which one has the most support and, most importantly, which one, given the choice, would you get?

Graham Hall
ha4gha@sunderland.ac.uk

A It's incredibly difficult to predict which 3D card will become the standard for the PC – mainly because it's far more likely to become a splintered market with multiple players. Companies such as VideoLogic (PowerVR), Voodoo (3Dfx) and Rendition (Vérité) are poised to capture the high-end ground while cheaper alternatives such as ATI's 3D Rage will no doubt be sold through in larger numbers. It's likely that Microsoft's *Direct 3D* API will support most 3D cards in the future but until then it might pay off to wait.

over the edge

Continued Edge 36

Game tribes gather in Le Mans... and Luton



This month, **Edge** made it to the famous 24-hour race in Le Mans courtesy of Electronic Arts. Hiring an executive suite overlooking the pitlane for the duration of the event, adorning Mario Andretti in EA Sports insignia and ensuring that 25 journalists had a good time was the objective. And, as you'd expect, the latter was a feat easily accomplished. Watching a crowd of deranged motor-racing fans almost kill each other while fighting over free shirts being lobbed from the pitlane suite (bottom right) was a sight to behold. And you thought videogaming had its fair share of casualties...





Closer to home, the PlayStation-sponsored Tribal Gathering in Luton took several days out of **Edge**'s hectic schedule as 20 hours of the world's greatest dance artists and DJs took its toll. **Edge** paid respect to The Chemical Brothers, Paul Oakenfold, Leftfield and some brilliant psychedelic trance in the Tribal Temple from Green Nuns Of The Revolution (it's all in the name, you understand) and Hallucinogen (soon to grace the soundtrack to SCi's *SWIV*, in fact). Not forgetting the hyperactive brilliance of Brain Transeau (aka BT). Oh, and some PlayStations were there for those retaining some hand-eye coordination.



To get back in the swing of things, *Mario 64* proved the ideal antidote. As the magazine closed a reader informed the team that by collecting 120 stars a special cannon is revealed which lets Mario rescue Yoshi from the top of the castle. And anyone who has spotted the spooky Turin Shroud-like rock face in one of the caves in *PilotWings 64* will no doubt be wondering if Texan co-developers Paradigm are, in fact, on a mission all of their own...

Finally, **Edge** would like to bid a fond farewell to its production editor, Nick Harper, about to defect to work for Psygnosis as a games designer. This leaves a gaping hole in **Edge**'s editorial team, and it welcomes applications from experienced writers with a lust to be reporting from the cutting edge of interactive entertainment. Interested parties should send a CV and a work sample to: The Editor, **Edge** magazine, 30 Monmouth St, Bath, BA1 2BW.





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Hypemeister:
Tom Kalinske

Edge testdrives
Psygnosis' *F1*